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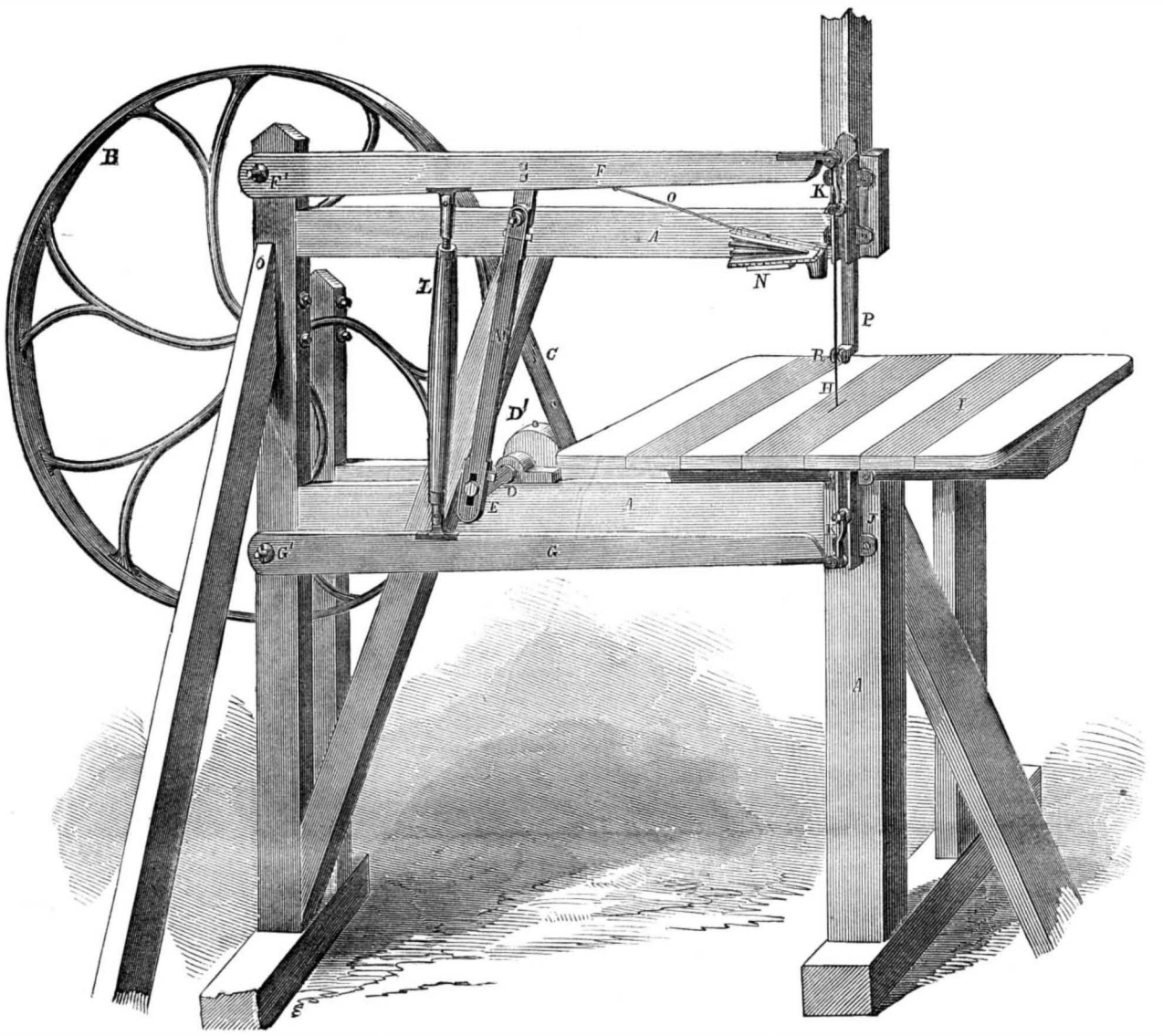
WOOD & DE VAUGHAN'S JIG SAW.

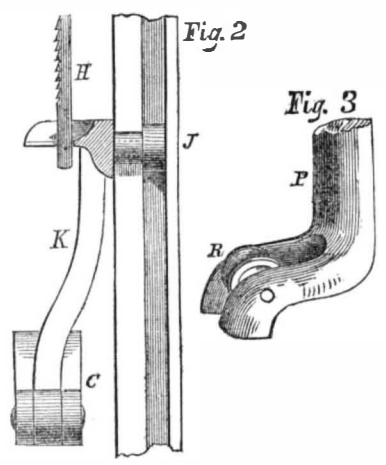


Improved Jig Saw.

The apparatus here represented secures, in an admirable manner, the ends desirable in the small and rapid machines used for cutting scrolls and other fancy and irregular work. The saw is stretched very perfectly, and guided and supported in such manner as to allow the use of a very narrow saw. Its ability to describe short curves is considerably greater than that of most styles of scroll sawing machines.

Fig. 1 is a perspective view of the machine complete, while Figs. 2 and 3 represent a few details on a larger scale. The saw runs in fixed guides, and is stretched between light elastic levers of wood, to which it is connected by short and light links. The saw is supported by a guide wheel at its back, immediately above the surface of the wood which is being sawed. Fig. 2 represents one of the links which connect the saw to the levers; and Fig. 3 represents the steadying or guide wheel, which stands behind the saw.

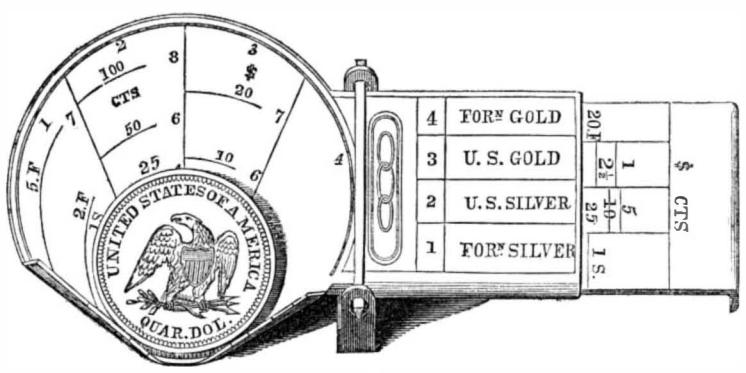
A represents the frame of the machine, and B the large pulley on the first or driving shaft. C is a belt conveying the motion to the small pulley, D′, on the crank shaft, D. E is the crank pin. F is the upper lever, and G the lower lever, turning respectively on their fixed centers, F′ and G′. H is the saw, and I the table on which the work is placed. J J are guides, and K K short links connecting the cross-heads or guide pins at the end of the saw to the corresponding levers. L is a straining piece provided with a screw, as represented, and by turning which the tension of the saw may be increased or diminished at pleasure. M is the connecting rod which conveys the motion of the crank pin to the lower lever, G. N represents the ordinary bellows, to remove the saw-dust from the top of the work, and O the spring by which the discharge of air is induced. P represents simply a steadying bracket, the hight of which may be readily adjusted by the screw, as represented, to adapt its position to the thickness of the stuff being sawed; and R is a steadying wheel mounted in P, and grooved in such manner as to bear firmly and fairly against the back edge of the saw.



The elasticity of the levers, F and G, which are usually of ash, is amply sufficient for the slight inequalities in the length of the saw and attachments due to the varying angles of the links, K K. All the parts being extremely light, the saw is driven at a very high velocity without serious vibration or other difficulty. The motion is always in a perfectly right line, so that the kerf or thickness of the cut is little or no greater than the width of the saw.

For further information address the inventors, Wm. P. Wood and Saml. de Vaughan, Washington, D. C., who obtained a reissued patent therefor on the 10th of March last.

MARANVILLE'S MONEY SCALE.



The instrument represented in the accompanying figure is both a weighing and a measuring scale, adapted equally to American and the most common foreign money. It is intended to be kept on the shelf or counter of each business man, as a ready means or detecting any fault in the weight or size or either silver or gold coin. It is represented as being used to test, in this manner, an American quarter.

Considered as a measure simply, it will be observed that the coin is laid with its edges in contact with the turned up lips on the lower side. The surface of the lune-shaped portion of the scale remaining uncovered is divided by radial lines into four parts, numbered 1, 2, 3 and 4. The first, as is distinctly stamped on another portion, is intended to indicate the sizes of the respective foreign silver coins (1 shilling, 2 francs, 5 francs, etc.); the second does the same for American silver, the third for American gold, and the fourth for foreign gold. The lips or rims referred to on the lower or near side, serve, by their varying thickness at different points, to indicate in an equally simple manner, the proper thickness for the rims of the respective pieces, so that the instrument instantly indicates whether the coin is or is not of the exact proper diameter and thickness.

Across the upper surface of the plate is soldered a light triangular bar, as represented, and the overhanging ends of this bar are supported in holes in the upturned ends of a strip of metal, which, stretching across beneath, serves as a support for the whole. An additional part, seen on the right, is mounted so as to be free to slide in or out on the arm of the scale opposite to the coin, and there are graduations on its upper face which denote the exact extent to which it should be drawn out to balance each coin. Thus the apparatus becomes a delicate and very nicely adjustable scale for weighing each coin—not for indicating the absolute weight in pennyweights, etc., but simply for showing whether or not the coin under examination is of a weight equal to its standard.

This invention is very cheap and portable, and is evidently little liable to get out of order. It is represented full size, and can be carried in the pocket with very little inconvenience. Ordinary money scales are capable only of indicating the weight; and when, in order to make up from baser metal the proper weight of a gold coin, the coin is made thicker, or of larger diameter than usual, they have no means of detecting the fraud.

The instrument was patented on the 13th of January last, by H. Maranville, of Clinton, Ohio, from whom any further information respecting it may be obtained.

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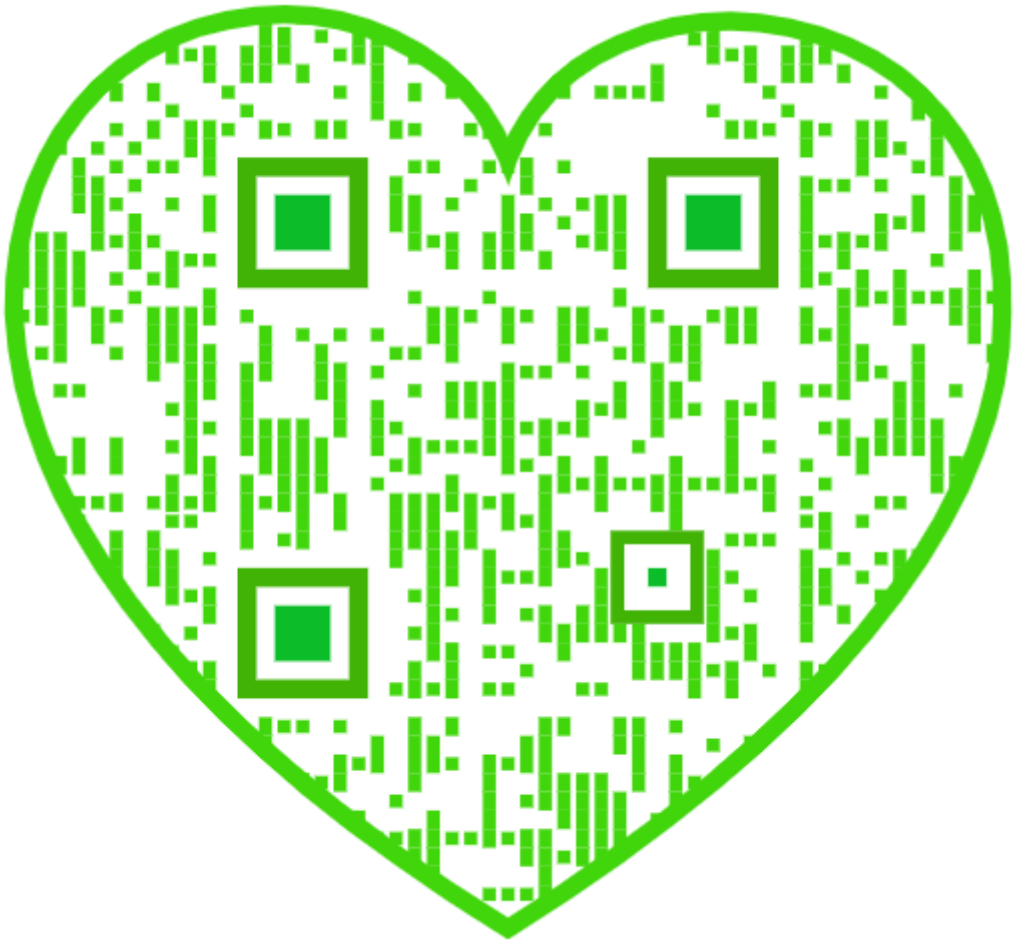

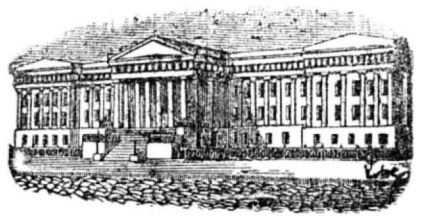

[Reported officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING AUGUST 11, 1857.

MOWING MACHINE—Wm. Bacheller, of West Newbury, Mass.: I am aware that the thill frames and cutter frames have been variously connected, and in many instances by flexible joints, but not in the peculiar manner described.

I claim the combination of the thill frame, I, with the cutter frame, F, when said frames are constructed and used in combination with the supporting wheels, B B, and operating wheels, C C, in the manner and for the purposes set forth.

AUTOMATIC LUBRICATOR FOR R. R. CAR AXLES—Wm. Baker, of Utica, N. Y.: I am aware that machines have been constructed to lubricate car journals, by conveying the oil, or other lubricating material, from a reservoir below to the journal, by means of capillary attraction, by the use of cotton wicking, cotton cloth, cotton waste, coarse wool, or other porous or spongy substance applied between the oil and the journal, and also by the action of various mechanical agencies and constructions placed under and around the journal, and depending for their action upon motion to be communicated to them by the revolving action of the journal.

I do not, therefore, claim any such agency, and whatever contrivances may have been constructed by the use of bobs or pendulums to convey the oil to the journal, and moved in any manner by the motion of the cars.

But I claim the mode described of conveying and applying the lubricating material to the journals of railroad cars and locomotives, by ejecting the same from the reservoir to the journal by the use of the piston, as described, which is moved directly by the jar or concussion when the car or locomotive is in motion, without the aid of capillary attraction, or the use of any absorbent whatever, or any mechanical agency to be propelled by the revolving action of the journal, the same being arranged and operating substantially as set forth.

ROTARY VENEER MACHINE—Gilbert Bishop, of New York City: I claim, first, The revolving disk and knife placed eccentrically to the disk upon the under surface or upon the edge of the disk, and having a curved edge for cutting the log in the line or direction of the edge of the knife.

Second, The vibrating of the log, by means of the log box, arms, cams and toes, connected with the rotation of the shaft of the disk, as described, so as to present the whole top surface of the log to the edge of the knife as it passes, and by a continuously varying line of cut or stroke.

Third, I claim the manner of constructing the log box with the movable bottom, composed of the cell and clamp pieces for holding, shifting and adjusting the boxes described.

Fourth, I claim the combination of the log box and feed apparatus operating together, as described.

DREDGING MACHINE—Asa Blood, Sen., of Norfolk, Va.: I claim, first, The dog, E, in combination with the beam, A, and rod, a, operating as described, for the purpose of holding the dredge open in descending, and for relieving its hold by its own weight as soon as the weight is taken off the chain or rope.

Second, The combination of the levers, B C and C', with beam, A, and rod, e, operating as described, for the purpose of opening and closing the dredge, as described.

GLASSWARE HOLDERS—Hiram Dillaway, of Sandwich, Mass.: I claim an instrument composed of a handle, a supporting plate, a yoke, and a spring combined, to operate substantially as described, for the purpose set forth whether the yoke be provided or not with an internal holding die, g g, as specified.

[This relates to the holding of glass bottles, lamps, bowls and other glassware during the manipulations necessary in their manufacture. It is a very convenient device, and far less liable to break the ware than the means usually employed; further than this, it never fails to hold all articles exactly in the center.]

HULLING COTTON SEED—Wm. R. Fee, of Cincinnati, O.: I do not claim the device shown in the mill of Walker, patented in 1855, or any other form of mill dress heretofore known

But I claim a series of cutting edges with deep intervening furrows, for the purpose of hulling cotton seed by a cutting action, which renders both the screening process and the expression of the oil easy and complete, as set forth.

WATER CLOSETS—Lewis Fisher, of Buffalo, N. Y.: I disclaim removing the cover by the weight of the person upon the seat, broadly considered, as this has heretofore been done in the construction of water closets.

I claim the arrangement of the sliding cover, A, with the jointed seat, D, and springs, B, for the purposes and substantially as described.

PLANING MACHINES—Benaiah Fitts, of Worcester, Mass.: I claim in driving gears on feed rollers for wood planing machines, the internal gear, F, and the external gear, G, in combination with the pinion, H, and connecting arms, I and J, when constructed and operated as set forth and described.

MOWING MACHINES—Alanson Gale, of Poughkeepsie, N. Y.: I claim operating the cutter bar, f, from the master wheel, A', by means of the mechanism constructed and arranged in relation to the main frame and master wheel of the machine, substantially in the manner described.

WHETTING PLANE BITS—Jesse M. Gilstrap of Washington co., Ark.: I claim the use of the bit holder, H, constructed as described, when operated by the devices arranged in the manner and for the purpose specified.

HOMINY MILLS—J. B Gowdy and J. A. Welsh, of Xenia, Ohio: We are aware that beaters secured to rotating shafts and placed within a case, have been previously used for cracking corn, and for analogous purposes. We therefore do not claim the beaters, f, attached to the shaft, C, separately or in themselves considered.

But we claim the shaft, C, provided with the beaters, f, and flanches, e, in combination with the horizontal plates, d, within the perforated case, A, substantially as shown, for the purpose set forth.

[By this mill the grain is thoroughly scoured, winnowed and cracked. The shaft is upright and hollow, and provided with both annular flanches and beaters, which travel between annular flanches projecting inward from the interior of the case. The feed is regulated by a slide, and the mill works very rapidly, and occupies but a small space.]

CURTAIN FIXTURES—Nathaniel S. Graves, of Boston, Mass: I do not claim, broadly, fastening the curtain to the roller by securing it to a wire or rod that is introduced into a groove in the roller, having a narrow slit for the passage of the curtain, but this I only claim when the sides of the groove are dovetailed, as described, whereby the curtain is securely held to its roller without other fastenings, as set forth.

MANUFACTURE OF SULPHURIC ACID—Alfred Monnier, of Camden, N. J.: I claim the process of preparing native metallic sulphurets, by pulverizing them and mixing them with the substances, as described, in order to extract all or nearly all the sulphur from them, for the purpose of making sulphuric acid.

BREWERS' STEAM BOILING APPARATUS—Adolph Hammer, of Reading, Pa.: Disclaiming connecting a series of branch pipes with, and on to a main pipe, upon which said branch pipes may be rotated, in the manner described by A. Stillman in his patent of May 16, 1846.

I claim arranging the steam pipe in boiling apparatus in two or more separate and distinct parts or series, in the manner substantially as described, whereby either both or all parts or series of pipes may be elevated by rotating the same upon axes of rotation at or near the center of the tub, for the purpose specified

SHIPS' CAPSTANS—Samuel Huse, of New York City: I am aware that capstans have been arranged to give a more rapid motion, or one with increased power, by connecting or disconnecting the drum and barrel, and at the same time throwing into play or out of play internal gearing, or by changing the direction of motion the drum and barrel, and therefore do not claim generally the construction of a capstan to accomplish these ends.

But I claim the arrangement and use of the hollow shaft, D, attached at one end to the drum or head, and in combination therewith the movable gear plate, G, constructed substantially as described, and worked by a pinion on the lower end of D.

I also claim, in combination with such hollow shaft and movable gear plate, the arrangement of the clutch levers, or an equivalent thereof, for the purpose of connecting such movable gear plate to the barrel, and at the same time disconnecting the head and barrel, or vice versa, and thus changing the action of the capstan to a quicker or more powerful one in a moment, and without changing its motion or displacing any gear.

STEERING APPARATUS OF STEAM CARRIAGES—Edward C. Jones, of Pittsburgh, Pa.: I am aware that the lever arrangement which communicates the motion from the parts operating the steering wheel to the clutches of the driving wheels may be modified and changed in many different ways, by various mechanical means; I therefore do not confine myself to any particular, or to the special lever arrangements described, to effect said communication of motion or power.

But I claim first, Operating the clutches, J J', of the driving wheels by the same parts by which the steering wheel is operated, in such a manner as to disengage (by operating the said clutches) the one or the other of the driving wheels, simultaneously with the turning of the steering wheel to the right or left, substantially as set forth.

Second, I claim the arrangement of the lever, M, links, P P', levers, N N', with their arms, O O', connected therewith by a butt hinge joint, and the springs, Q Q', when constructed, combined and operating in connection with the pinion, E, and the clutches, J J', substantially as described, and for the purpose set forth.

Third, I claim the arrangement of a pivot, a, in or near the center of the steering wheel, and passing through its axle, for the purpose set forth.

SHIPS' CAPSTANS—David Knowlton, of Camden, Me.: I do not claim making a power capstan to operate by means of a combination of gears, ratchets and pawls.

But I claim, in my improved capstan, the combination of the gear, K, at the bottom of the capstan (when made and applied so as to be rotated or be made fast alternately, as described,) with the gear or pinion, G, attached to and revolving with the capstan head, C, they being connected by gears, and operating in the manner and for the purpose described.

AUTOMATIC LUBRICATOR FOR R. R. CAR AXLES—Alexander B. Latta, of Cincinnati, Ohio: I claim the arrangement of the lever, v, rod, w, and spring, x, combined with the car, y, as represented, or their equivalents, for actuating the lubricator, by the vertical vibrating motion of the cars, as, and for the purposes mentioned.

FAUCET—John C. Macdonald, of Cincinnati, Ohio: I claim the arrangement of the valve stem, H', the nut, o, the valve guide, F, the screw, C, and the cap or screw and nut guide, Q, which also contains the stuffing box m, for the purposes set forth.

[This is one of the forms of screw valve faucet—the novelty consisting in a peculiar screw, nut and guide—by which the valve stem is prevented getting out of line, and the valve surface is kept true to its seat. Great facility is also afforded for re-grinding the valve when necessary.]

SILK DYEING MACHINES—Nicholas Mary, Sen., of Philadelphia, Pa.: I claim the combination of the steam chambers, B and L, with the friction surface of rollers, D, E and F, for preparing and dyeing the material, the whole being arranged and operating substantially as described.

LEAKAGE ALARM—G B. Massey, of Mobile, Ala.: I claim the arrangement of the parts cited relatively to one another for united operation, to produce a leakage alarm and register for ships, to wit., the bell D, arranged on a firm part of the vessel, B, the spring, F, within the barrel, E, and the barrel within the bell, the float chain G, on the spring barrel, E, the hammers, I I', within the bell, the pin wheel, J, and the mechanism by which they are operated and controlled on the arbor of the spring barrel, and the mechanism which measures the rise and fall of water alongside the signal mechanism, and so as to be actuated by the spring which sounds the alarm, substantially as and for the purposes set forth.

[In this device, a float within the hold of the vessel is so connected to striking apparatus and to a dial and registering apparatus, that by reference to the two latter the true depth of the water in the hold may be ascertained, and also the rate at which the surface of the water is rising or falling, while the striking apparatus, by acting on a bell attached, gives instant warning when the water rises to such a hight as to demand attention.]

REEFING TOPSAILS—James W. Norcross, of Boston, Mass.: I do not claim carrying the reef tackles from the reef band upward through blocks placed at or under cross trees, and from thence down to the deck, whereby all that part of the sail which is below the reef band is suspended or drawn tightly up while the yard is being lowered down to or towards the reef band.

Nor do I claim reducing sails by means of an arrangement of reef tackles, wherein each reef is fastened at one end of it to the topsail yard is thence led down through a leading block fastened to the reef band of the sail, thence carried upward to and through the yard, and around a sheave placed thereon, and thence carried toward the mast, and through a leading block affixed to the topsail yard near to the middle thereof, thence upward from the said leading block to and through a leading block affixed to the cross tree, thence downward therefrom and fastened to the topsail yard.

But I claim my arrangement of reef tackles described, the same consisting in fastening the said reef tackles to the sail at or near the reef band, thence leading them upward through sheaves or blocks, or their equivalents, applied to the topsail yard, and from thence extending the said reef bands upward and through blocks suspended to the cross-trees, or that part of the topmast just below them, and thence leading the reef tackles downward, and fastening them to the topsail yard at or near its middle, substantially as described.

FILTRATION PRESS—Wm. Needham and Jas. Kite' of Vauxhall, Eng.: We do not claim the exclusive use of any of the parts, taken as parts of the apparatus described and shown, but only in so far as the same is used in combination, for the purpose of our invention.

We claim the exclusive use of the combination of parts described, forming apparatus or machinery for expressing liquids or moisture from substances.

BATHING APPARATUS—John K. O'Neil, Kingston, N. Y.: I do not claim an annular showering pipe separately, such, or its equivalent, having been used before in other connections.

But I claim the combination of the annular pipe, E, or its equivalent, with the flexible connecting pipe, D, or its equivalent, operating substantially in the manner and for the purpose specified.

SAUSAGE CUTTERS—Jacob Peters, of Hummelstown, Pa.: I claim the employment of the vertical sashes, a and b, the one arranged within the other, their knives interlapping and operating in different directions, for the purpose of sawing and more effectually preparing the meat, as set forth and described, it being understood that I do not claim the main features of the machine, as it is not, in that respect, new, nor yet the device merely of giving a sawing motion to the fixed knives of meat cutters, this also being not new; but only the arrangement here specified of two sets of knives working into each other with motions in opposite directions.

GAS GENERATORS—Allan Pollock, of Washington, D. C.: I claim, first, The peculiar form and arrangement of the retort with the grooves for the passage of the gas from the vent holes of the canister to the gas chamber

Second, The canister, with the vent holes above described, by which I take the gas from the center of the canister, the lid extending down to or near the top of said vent holes.

SAFETY TOPS FOR RAILWAY CARS—Albert Potts, of Philadelphia, Pa.: I claim, first, The mode or manner of constructing railway passenger cars with the tops and bodies disconnected for the special purpose specified.

Second, I also claim the metallic plates or grooved and beveled rails as above described, for uniting the tops with the body of the car, as specified.

Thirdly, I also claim the combination of the pendulums as fully described in Figs. 3 and 9, for the purpose of holding the tops to the bodies of the cars, substantially as specified.

OPERATING CAR BRAKES—E. R. Roe, of Bloomington, Ill., I claim the combination of the "anchor" F, in its connection with the arm, E, and the pin, G, and operated as described by the cams and pins, in connection with the wheel, C, in the manner described, and for the purpose described.

MASH COOLING MACHINES—Jesse Shilling, of Troy, N. Y.: I claim the hollow arms, b, with the hollow teeth, c, attached, said teeth, some or all, having lateral shares or projections, f, attached; the hollow arms, b, being attached to a rotating shaft, B, and communicating with a pipe, G, which is connected with a fan box, H, the whole being arranged substantially as described for the purpose set forth.

[The mashing rake is hollow, and air blown into it by a fan or other suitable blower escapes from the bottom and sides of the hollow teeth, and rising through the liquid cools it very rapidly.]

GRAIN MILLS—O. W. Stanford of Cincinnati, O.: I do not wish to be understood as claiming any particular number of concentric channels, f, and grinding surfaces g; nor the shape of said channels and the manner of furnishing the grinding surfaces with teeth.

But I claim the alternate channels, f, and grinding surfaces, g, as represented on the surfaces of the plates, d and h, when said alternate channels, f, and grinding surfaces, g, are made concentric with the center of motion given to the plated, and when arranged with each other, and operated in the manner and for the purposes shown in the specification.

WINNOWING MILLS—Manassah Grover, of Clyde, O., assignor to himself and H. Seely, of Hudson, Mich.: I claim arranging in the throat or opening of the fan case, a series of troughs or scoops, c, in combination with the obtuse angles, E, of the fan blades, in the manner and for the purposes fully described.

PEGGING BOOTS AND SHOES—B. F. Sturtevant (assignor to himself and Elmer Townsend), of Boston, Mass.; I claim the bell shaped feed wheel, A, and its arrangement with reference to the awl and peg wood carrier, and provided with one or more ranges of holes substantially as described, the awl being made to work at an inclination to the axis of the feed wheel or from the axis towards and through the rim of the wheel as described.

I also claim the above described mode of feeding the shoe along—that is, by the awl or its equivalent and the feeder wheel, the latter not only assisting in feeding the shoe along by the pressure and action of the ranges of tapering holes, but in holding the shoe in position while the awl is raised out of the sole.

EXPANDING AUGER BIT—Asa Weeks (assignor to himself and O. W. Fiske) of South Boston, Mass.: I do not claim the invention of movable cutters; nor do I claim the employment of a double threaded screw for adjusting the distance of a lip and cutter as shown in the patent granted to J P. Rollins, December 25, 1855.

But I claim combining with the double threaded screw, C, and arranging on the split tapering shank as described, a rotary sleeve, and its screw, arranged as described.

LIME KILNS—Daniel Stephens, of Elmira, N. Y.: I claim the diagonal or oblique flues with sloping bottoms arranged substantially as described in combination with the shaft, B, and its branches, b b, for the purpose specified.

FILTER—J. A. Thompson, of Cayuga, N. Y.: I do not claim the ordinary cask filter with pot or reservoir with attachable metallic air and draft tubes, the whole fitted with charcoal, alternated with gravel, sand, &c., the same having been known and used.

But I claim the combination of the receiving vessel or upper filter, the reservoir with flange or rim, and attachable air and draft pipes to same, substantially as described; not confining myself to any particular mode or material which shall produce like effects and results.

STEAM GAGES—D. G. Wells, of New York City: I claim the use of a flattened tube when constructed and arranged in layers, substantially as described, and for the purposes set forth.

TEA KETTLES—Wm. Westlake, of Milwaukie, Wis.: I am aware that tea kettles have been made having lateral pipes attached for the admission of gas as a fuel. An example is seen in Bogget & Pettit's patent, April 18, 1854. I do not claim such tea kettles. They are quite different in construction from mine, are used for a different purpose, and operate in a different manner. No air would enter through the fine apertures of their burners. My kettle forms a highly useful household article, and is not dependent for its operation upon a pressure of coal gas.

I claim as a new article of manufacture a tea kettle made as described.

[The object is to economize fuel by making the heat of the fire more intense directly under the kettle. The invention consists in constructing a tube entirely through the kettle, so as to lead air down through the kettle into a perforated chamber below. The fire may be either in this perforated chamber or within the stove on which the whole is placed.]

FINGER BAR FOR REAPING AND MOWING MACHINES J. T. Whitaker and C. D. Read, of St. Charles, Ill.: I claim a tubular finger bar when constructed in the peculiar manner, and for the purposes substantially as set forth.

TRY SQUARES—Joel Whitney, of Winchester, Mass.: Having thus fully described the construction and operation of my improvement on the try square, I will proceed to point out the parts which I claim as my invention, and desire to secure by Letters Patent.

I claim the flattened pin, working in the slot, in combination with the eccentric pin, arranged substantially in the manner and for the purpose described.

SMOOTHING PLANED WOODEN SURFACES—B. D. Whitney, of Winchendon, Mass.: I claim the scraper, u, pivoted and operating in the manner substantially as described, in combination with a mechanism for the purpose of carrying the wood forward in contact with the scraper.

POLISHING STONE AND GLASS—G. H. Wood, of Green Bay, Wis.: I claim the polisher, F, supported and operated as above described, in combination with the adjustable guide and gage, frame G, and the reciprocating carriage, K, when the whole is arranged to operate conjointly as shown for the purpose specified.

[There are two motions to the polisher, one being an ordinary rotary movement, and the other a circular traveling motion of the axis around a center. The glass or other article to be polished is mounted on a bed which is moved with a reciprocating movement. The surface is polished very uniformly and expeditiously.]

SPRING LANCETS—J. F. Martin, of Marshall county, Va., administrator of Wm. Parkinson, deceased, of the same place: What is claimed as the invention of said Parkinson is the application and adjustment of the spring, B, being the re-action spring by which the blade is instantly drawn back, by which safety and accuracy are attained in bleeding.

SHEARING AND PUNCHING—B. F. Hooper (assignor to himself and Ransom Ballou, Jr.,) of Albany: I claim the employment of the beam, D, having an inclined slot in its extremities carrying the pins on which the punch and shears are suspended as described, and operated in the manner substantially as set forth in the specification.

MARKING TIME OF ATTENDANCE OF WORKMEN—B. F. Harris, (assignor to John McKillop) of Brooklyn, N. Y.: I claim, first, The combination of the registering surface operated by clock work with the movable markers, when the latter are arranged as set forth.

Second, The combination of the movable markers and their arms k and l, with the indicators, u, and their concomitant parts as set forth.

MOULDING BRICKS—J. Z. A. Wagner, of Philadelphia, Pa., assignor to P. H. Watson, of Washington, D. C., assignor to E. S. Renwick, of New York City: I claim in my machine for making tubular bricks the combination of the mold box with a core, and an annular bottom or piston, the whole constructed and operating substantially as set forth.

SEWING MACHINES—Wm. C Watson (assignor to himself, G. H. Wooster, and J. W Gregory) of New York City: I claim the improved device for seizing the loop, and holding and properly presenting it for the passage of the needle, consisting of a vibrating hook, b, in combination with a gripper or hold fast, c, so arranged and operated as alternately to close upon the loop after being engaged by the hook, to draw back the said loop, and to release the same after the passage of the needle through in the manner described.

TURNING SPOOLS—A. D. Waymoth, (assignor to himself and H. W. Page) of Fitchburg, Mass.: I claim the combination of a stamping or milling wheel with mechanism substantially as above described, for turning a spool from a piece of wood as explained, the said wheel being arranged so as to mill, engrave, or indent the end of a spool while said spool is being made or before it is separated from the stick as explained.

I also claim the combination of the two pitmans and the lever plate or wheel, or equivalent devices, with a lever for elevating the severing cutter, and that for carrying the body cutter, whereby the said body and severing cutters are made to operate in manner as specified, that is during one single forward movement of the lever, L, connected with the severing cutter.

I also claim the tapering screw chuck constructed as specified.

HOT AIR FURNACES—D P. Weeks, of Boston, Mass.: assignor to himself and Eben Seavey, of Charlestown, Mass.: I do not claim the invention of a tapering discharge pipe, nor arranging a series of such around the fire pot; and so as to open at their bases into the same.

Nor do I claim combining and arranging with a firepot, and such a series of pipes a conical or tapering radiator closed at its top, and placed within the series and directly over the fire, and so as to receive the volatile products of combustion from the fuel, and deflect them outwardly towards and into the mouths of the several discharge pipes.

Nor do I claim an annular radiator; nor do I claim conical or frustro conical bases or semi-cones combined with the fire pot, and its series of tapering discharge pipes, and serving to support and open into said pipes respectively, as I am aware that much, it not all of such is used in the furnace of Gardner Chilson, and claimed by him in his Patent dated September 26, 1854.

But I claim the combination and arrangement of the parachute radiator, A, air chamber B, and pipes, F F, with the fire chamber C, and the reverberating chamber D, having smoke passages or pipes E, applied to the same and leading into the radiator A, as described,

I also claim the manner of constructing the radiator, A, viz., with a tapering tunnel, i, an annular deflecting dome, f, and a discharge passage or pipe, d, arranged together substantially as specified.

I also claim constructing the air chamber, B, with a bulb or projection park, k, when such chamber is arranged within a reverberating chamber. D, made to communicate with the discharge pipes, E E, and a chamber of combustion, and to surround the radiator, A, opening at its lower end into the said chamber of combustion essentially as set forth.

DROP PRESS—Wm. Wilson, Jr., (assignor to Wilson, Green and Wilson, Jr.,) of Brandywine, Del.: I claim the employment of the spring, E, when so arranged with the drop, C, as to effect the delivery of the article stamped, substantially in the manner set forth.

SETTING PORCELAIN TEETH—M. L. Wright, of Cleveland, O.: I do not claim the carving of full sets of teeth out of one piece of porcelain material or half setts of teeth out of the same, nor of block work to be united to a metallic base; nor the molding or modeling of porcelain material around porcelain teeth on a porcelain base for full sets or full half sets of teeth.

But I claim the making of parts of full sets or parts of half sets of teeth for either the upper or under jaw, where one or more teeth are good and permanent, and where one, two or more may be skipped as seen at e e e, figs 1, 2 and 3, making the whole plate and teeth of one piece of porcelain in the manner described.

RE-ISSUES.

RICE HULLERS—Peter McKinlay, of Charleston, S. C. Patented April 1, 1851: I claim operating the pestle by having it attached to a rod passing through the bottom of the mortar, and receiving motion through a crank or its equivalent, substantially as and for the purpose and object set forth.

BOOT CRIMPS—J. M. Read, of Boston, Mass., assignee (through Abraham Thayer) of Josiah Copeland, of Weymouth, Mass. Patented January 20, 1844: I do not claim strictly the combination with a pyramidal frustrum or block A of another piece of metal forced down upon or over it by a screw or other contrivance separate from the main straining screw, and for the purpose of confining the corners or edges of the leather between the said pieces of metal.

Nor do I claim the forcing of the two jaws or pieces of metal together by a screw or other contrivance separate from the main straining screw; but I claim the manner described of arranging the block, A, and clasps C, so that the turning up of the straining screw shall at the same time perform the double operation of confining the ends of the leather between the block and clasp, and of stretching the leather over the boot form, the whole being substantially as described.

ADDITIONAL IMPROVEMENTS.

HOISTING WINCHES FOR SHIP BOARD—Joel Bryant, of Brooklyn, N. Y. Patented April 7, 1857: Therefore disclaiming the individual parts of the said winches and all other winches for hoisting hitherto known or used, and reserving and claiming the right to increase or diminish the number of wheels, blocks, sheaves or pulleys or to change their relative position within the legitimate scope of my invention as necessity may require or expediency point out—with reservation, and without infringing upon any other known invention of winches.

I claim the invention and use of winches (or compound winches) for hoisting, constructed and operating substantially as described and set forth in the original, and in this additional description and specification of new and additional improvements in winches.

IMPORTANT TO INVENTORS.

INVENTORS AND PATENTEES will bear in mind that the editors of the Scientific American are conducting the most extensive American and European Patent Agency in the world. They have offices in New York, Washington, London, Paris and Brussels, through which they prosecute applications for patents upon such terms as have not failed to bring them a business in extent far beyond that of any other agency in this country. This clearly shows the confidence reposed in them by inventors generally. They have no new or peculiar process to advertise, by which the business is to be done. They proceed according to law, and they have found that, after an experience of nearly twelve years, no other system, however peculiar, can equal it. Inventors should never trust their business to inexperienced persons. If they wish to have their papers prepared to stand a legal test, they should be cautious to employ agents experienced in the business. Circulars of information sent free.

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Colors and Contrasts.

F. Grace Calvert recently read a paper before the Royal Institution of Great Britain on the laws of color, in which credit is given to M. Chevreul for important discoveries in this branch of science.

It is now proved that there are but three primitive colors, and four secondary, called complementary colors. Several proofs can be given that light is composed of three colors only. One of the most simple consists in placing pieces of blue, red, and yellow papers on a circular disk, and rotating it rapidly; the effect to the eye being to produce a disk of white light.

Sir Isaac Newton was the first person who gave to the world any statement relative to the components of light, which, he said, consisted of seven colors—red, orange, yellow, green, blue, indigo and violet. It is now distinctly proved that four of these seven colors of the spectrum are the result of the combinations of the three colors now known as the primitive colors. Thus blue and red combined produce purple and indigo; blue and yellow, green; while red and yellow produce orange.

Since Newton, many minds of the first order have applied themselves to the subject of light, and Count Rumford, about the end of the eighteenth century, published several memoirs on the laws of color, in which he explained very satisfactorily the "successive" contrast, and arrived at some insight into the "simultaneous" one; but, according to Calvert, the reason Rumford and the hosts of others did not arrive at the definite laws of color was because they had not divided those laws into successive, simultaneous and mixed contrasts.

A substance appears brilliant when a light which falls on its surface is reflected on the retina, and in a great quantity; whilst in plain white surfaces, the rays of light being diffused in all directions, and a small portion only arriving to the eye, the surface does not appear brilliant. The influence of colors on these two kinds of surfaces is very different. When rays of light, instead of being reflected, are absorbed by a surface, it appears black; therefore white and black are not colors, as they are due to the reflection or absorption of undecomposed light. It is easy to understand why a surface appears blue; it is due to the property which the surface possesses of reflecting only blue, while it absorbs the yellow and red rays; and if a certain portion of light is reflected with one of the colored rays it will decrease its intensity; thus red rays with white ones produce pink. On the contrary, if a quantity of undecomposed light is absorbed, black is produced, which, by tarnishing the color and making it appear darker, generates dark reds, blues, or yellows. The secondary colors are produced by one of the primitive colors being absorbed and the two others reflected; for example, if red be absorbed, and blue and yellow reflected, the surface appears green. There are two reasons why a perfect blue, yellow, and red cannot be often seen. The first is, that surfaces cannot entirely absorb one or two rays and reflect the others. The second is, that when the retina receives the impression of one color, immediately its complementary color is generated; thus, if a blue circle is placed on a perfectly grey surface, an orange hue will be perceived round it; if an orange circle, round it will be noticed a bluish tint; if a red circle, a green; if a greenish yellow circle a violet; if an orange yellow circle, an indigo, and so on.

The "successive" contrast has long been known; and it consists in the fact that on looking steadfastly for a few minutes on a red surface fixed on a white sheet of paper, and then carrying the eye to another white sheet, there will be perceived on it not a red, but a *green* one; if green, *red;* if purple, *yellow;* if blue, *orange.*

The "simultaneous" contrast is the most interesting and useful to be acquainted with. When two colored surfaces are in juxta-position, they mutually influence each other—favorably, if harmonising colors, or in a contrary manner if discordant; and in such proportion in either case as to be in exact ratio with the quantity of complementary color which is generated in the eye; for example, if two half-sheets of plain tinted paper, one dark green, the other of a brilliant red, are placed side by side on a grey piece of cloth, the colors will be mutually improved in consequence of the green generated by the red surface adding itself to the green of the juxtaposed surface, thus increasing its intensity, the green in its turn augmenting the beauty of the red. This effect can easily be appreciated if two other pieces of paper of the same colors are placed at a short distance from the correspondingly influenced ones, as below:

Red. *Red. Green.* *Green.*

It is not sufficient merely to place complementary colors side by side to produce harmony of color, since the respective intensities have a most decided influence; thus pink and light green agree, red and dark green also; but light green and dark red, pink and dark green, do not.

If blue and purple are placed side by side, the blue throwing its complementary color, orange, upon the purple, will give it a faded appearance; and the blue receiving the orange yellow of the purple will assume a greenish tinge. The same may be said of yellow and red, if placed in juxtaposition. The red, by throwing its complementary color green on the yellow, communicates to it a greenish tinge; the yellow, by throwing its purple hue, imparts to the red a disagreeable purple appearance. The very great importance of these principles to every one who intends to display or arrange colored goods or fabrics was shown by Mr. Calvert, from a great variety of embroidered silks, calicos, and paperhangings, which demonstrated that if these laws are neglected, not only will the labor and talent expended by the manufacturer to produce on a given piece of goods the greatest effect possible, be neutralized, but perhaps lost. It was clearly demonstrated that these effects are not only produced by highly colored surfaces, but also by those whose colors are exceedingly pale, as, for example, light greens, or light blues with buffs, and that even in gray surfaces, as pencil drawings, the contrast of tone between two shades was distinctly visible. The contrast of tone or tint was most marked when two tints of the same color were juxtaposed, and it was therefore the interest of an artist to pay attention to this principle when employing two tints of the same scale of color. From the "mixed contrast" arises the rule that a brilliant color should never be looked at for any length of time, if its true tint or brilliancy is to be appreciated; for if a piece of red cloth is looked at for a few minutes, green, its complementary color, is generated in the eye, and adding itself to a portion of the red, produces black, which tarnishes the beauty of the red. This contrast explains, too, why the tone of a color is modified, either favorably or otherwise, according to the color which the eye has previously looked at. Favorably, when, for instance, the eye first looks to a yellow surface, and then to a purple one; and unfavorably when it looks at a blue and then at a purple.

Mr. C. also showed that black and white surfaces assume different hues according to the colors placed in juxtaposition with them; for example, black acquires an orange or purple tint if the colors placed beside are blue or orange; but these effects can be overcome, in the case of these or any colors, by giving to the influenced color a tint similar to that influencing it. Thus, to prevent black becoming orange by its contact with blue, it is merely necessary that the black should be blued, and in such proportion that the amount of blue will neutralise the orange thrown on it by influence, thus producing black. As an instance, to prevent a gray design acquiring a pinkish shade through working it with green, give the gray a greenish hue, which, by neutralising the pink, will generate white light, and thus preserve the gray.

M. Chevreul has, it appears, constructed a chromatic table, in which 13,480 colors are classed, so as to enable any person at a glance to ascertain what was the complementary color. It is important to know the exact color, shade and tint that produces the greatest effect when placed beside another color.

Preserved Carrots.

Among the varieties of preserves in use, we see no good reason why preserved carrots and parsnips may not prove quite acceptable to the large number who are very fond of one or both those esculents. A correspondent of the *Southern Cultivator* gives the following recipe for the preparation of the former root:—

Take one pound of carrots, one pound of sugar, and four lemons. Boil the carrots separately, and cut them in small pieces of an inch long, and a quarter of an inch thick; pare the lemons very thin, boil the peels thoroughly, and cut them like the carrots; then put in the juice of the lemons; boil the syrup over next day until quite thick, and after you have flavored it with the essence of lemon, pour it over the carrots again.

Alkalies.

Nature supplies few substances that are more useful to man than alkalies; and as we are expected now-a-days to know "something of everything," it is essential that we should learn the nature of alkalies. The word "alkali," is of Arabic origin, and means "the dregs of bitterness;" probably so named from their nauseous taste. The most marked quality of the alkalies is that of being diametrically opposed to an acid. Alkalies and acids are, in their natural state, exceedingly active and corroding substances, but when mixed they immediately neutralize each other's potent qualities, producing in nearly every instance a harmless body, called a salt. The principal alkalies are soda, potash, lime and magnesia, but there are a great many more than these. It is not a little remarkable that these four substances are diffused over the whole face of the earth. Now, as it is a fact that not a green leaf can be produced, nor an animate creature exist, without the presence of one or the other of these alkalies, it exhibits an extraordinary provision of nature that they are always found upon the exterior part of the globe rather than buried in the depths of a mine. Moreover, being lightly sprinkled hither and thither on the earth, instead of forming mountains here and none there, the alkalies are thus diffused through the land in precisely the right quantity that is best suited to the production of the "fruits of the earth." All kinds of crops, wheat, tobacco, sugar cane, &c., draw the alkalies from the soil they grow upon, and when the land is exhausted of its alkalies it is then that crops fail. The ashes from burnt wood or a smoked segar illustrate what the land has given to the plant. As the farmer uses his lime, and the doctor his magnesia for some specific purpose, so, in domestic life, soda and potash play their part. We could have no glass and no soap without these last mentioned alkalies. Grease and water, natural enemies, by the friendly intervention of a little alkali, produce that *acum* of life—milk.

SEPTIMUS PIESSE.

Descriptive Index to Chemical Patents Issued by the United States Patent Office.

Prepared for the SCIENTIFIC AMERICAN by Dr. D. Breed, Solicitor of Patents, Washington, D. C. Continued from Index to 1856, published by us April 18th last.

Bank Notes—Use of two colors which will absorb chemical, and not transmit reflected rays, to render color less fugitive: D. Seropyan, June 2.

Bleaching—Solution of caustic soda from 2° to 3° Baume, heated to 310° Fah., for treating straw before submitting it to chloride of lime: M. A. C. Mellier, May 26. France, August 7, 1854; England, October 26, 1855.

Cement—For roofs; gas tar, yellow ochre, oil and sulphuric acid: N. A. Dyar, March 3.

Cement—For roofs; coal tar, quick lime, gypsum, with a little yellow ochre, litharge, solution of india rubber, of gum shellac, linseed oil and molasses: R. H. Smith, January 20.

Cement—For roofs; asphaltum, coal tar, spirits turpentine, gum shellac, alcohol, india rubber, pulverized soapstone, plaster and sugar of lead: C. R. Milks, March 3.

Fertilizer—Concentration of fertilizing properties (of green sand, marl and animal matter) by separation of useless matter from marl, disintegration of sand and addition of ammonia: Charles Stearns, May 5.

Fertilizer—The liquid parts only of animal matter, treated with acid, after boiling or steaming: Laurence Reid, March 24.

Fertilizer—Mixture of green sand and superphosphate of lime: L. S. Robbins, May 26.

Flux—For copper alloys, to resemble gold; magnesia, sal ammoniac, quick lime and crude tartar: Mourier and Vallent, March 3.

Gas—Illuminating; passed through fused metals (fusible at low temperature) in order to facilitate complete production: R. Grant, January 27.

Gas—Combination of hydrogen with wood gas for illumination: Choate and Tyler, February 24.

Gas—From mixture of peat, resin, coal tar and oil: James Hansor, February 10.

Gutta Percha—Use of pipe clay in combination with sulphur in vulcanizing: Robert Haering, April 14.

Hams—Covering with composition of rosin, gutta percha and tallow: Carter Van Veeck, June 30.

Honey—Use of sulphate of alumina in making artificial: M. Butterfield, April 14.

Honey—Artificial; sugar, water and honey, with a little butter, cream of tartar, gum arabic, rosin, isinglass and essence of peppermint: Corbin and Marlett, May 12.

Iron—Furnace for refining, by blast of air delivered into the melted mass: William Kelley, January 20.

India Rubber—Use of gaseous ammonia, to increase the action of known solvents: Conrad Popenhusen, April 1.

India Rubber—Sheet united to cloth previously coated with unvulcanized rubber, by applying a tangent side to produce extensible fabric, or on free side to produce inelastic, by means of pressure: Gulielmus B. Millerd, February 10.

Incrustation—Prevented in steam boilers, by gum catechu: Robert McCafferty, April 14.

Nitric Acid—Steam or hot air forced through, to expel nitrous fumes and chlorine: Philip O'Reilly, March 24.

Oil—Direct action of steam upon oleaginous seed after grinding, previous to pressing; (machine): Wm. Wilber, January 27.

Oilcloth—Residuum of the still of candle factory, spirits of turpentine, rosin oil, yellow ochre, venetian red, whiting, oil cake, umber, lime and litharge: Joseph W. Harman, March 31.

Oil—Purified by alcoholic solution of alkali: Halvor Halvorson, April 28.

Powder—Glazing gunpowder by nitrate of soda: Lammont Dupont, May 19.

Powder—For blasting; sulphur, saltpeter, table salt, saw-dust, horse dung and molasses: A. Murtineddu, May 12.

Steel—Mixture of iron, carbon and manganese added to molten iron, to obtain malleable iron (?) or steel: Robert Mushet, May 26. England, September 22, 1856.

Starch—Maize steeped, then ground and levigated: William Watt, June 30.

Silvering—Combination of cyanide of silver, grape sugar, essence of sassafras, clay and Paris white: Levi L. Hudson, April 14.

Silicates—Soluble; produced by fluxing with soda, or potash, and deoxydizing agents: J. M. Ordway, February 24.

Soap Mixture—Composition of soda ash, salt and bran for scouring woolens: Louis Wilman, May 12.

Soap—Soda, spirits of turpentine, alcohol, aqua ammonia and water: J. Roorback, March 3.

Tanning—Use of press to expel water from hides without usual drying, and of peg lined cylinder to plump them and impregnate with grease: Joseph Armstrong, February 10.

Tanning—Use of saltpeter, alum and sulphuric acid in solution of catechu: E. Daniels, January 6.

Tanning—Combination of valonia, sulphate of soda, magnesia, potash and of alumina, sal soda, borax and boracic acid: D. H. Kennedy, April 14.

Zinc—Metallic; obtained from ores, the zinc vapors being passed through incandescent coal: Samuel Witherill, January 6.

Zinc Iron—Alternately smelting zinc and iron, to prevent the furnace from choking by continuous blast: Joseph C. Kent, Feb. 10.

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New Inventions.

Improved Stave Jointer.

The barrel is an invention peculiar to the most advanced condition of society. The Chinese, whose skill in making all kinds of impossible shapes in wood and ivory is proverbial, can cut balls within balls *ad infinitum*, but, if we are correctly informed, they cannot make a barrel nor even a small keg. There are few articles in common use so cheap, so convenient, and so indispensable as the various forms of cask. There is no other material so strong and so elastic, and so suitable for containing all the varieties of liquids, as wood, and no form in which it can be so conveniently moved and so readily hooked on to and released in hoisting, as that under consideration. Further, there is no form in which the structure can be so readily tightened as the material contracts, and certainly none approximating to it in economy of material. All credit, therefore, to the man, long since forgotten, who first invented the combination of staves, hoops and heads known as a barrel.

The invention represented in the accompanying engravings is one of the many which have been produced for the jointing of staves. The staves may be split out or be cut in any of the rapid methods now in common use, and are cross piled, so as to be seasoned in a perfectly flat or plane condition. The jointer here represented gives them exactly the proper swell, or increase of breadth at the bilge or middle, whatever may be the varying width of the staves, and provides what the inventor considers practically the best bevel for the edges.

It is well understood that a line drawn from the center to the circumference of a circle will form the true bevel for a segment of that circle, and it is with special reference to this principle that most of the jointing machines in use are constructed, making the bilge and bevel mutually dependent upon each other, and proportioning each to the other with mathematical accuracy. But in making barrels by hand in the usual way, a very considerable allowance is always made by the cooper in the bevel of the stave for the "pressure of the truss hoops." Too much bevel or "inset" is a serious defect, and the allowance necessary to be made varies with the thickness of the wood; the thinner the stave, the greater the allowance generally necessary.

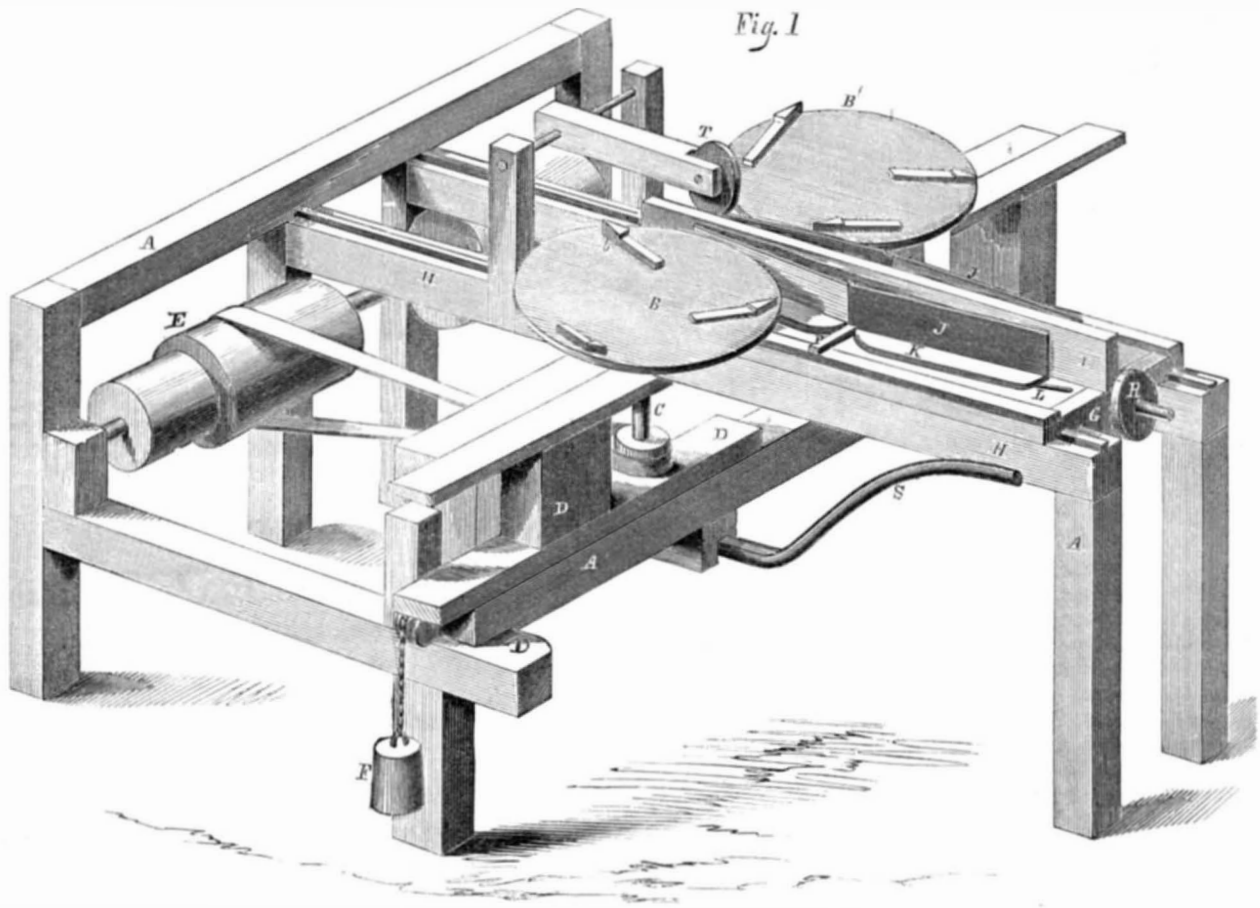
The jointing machine represented in the engravings is the invention of B. McKeage, of Accatink, Fairfax county, Va., who has been engaged for the last five years in manufacturing flour barrels from cut staves. Staves are usually cut to a circle somewhat larger than that of the barrel for which they are intended, say one-third larger; a bevel corresponding to that enlarged circle, would therefore cause the inner edges of each joint to be joined the most tightly when the parts of the barrel are all together. Mr. McK. considers this effect an advantage, and in the construction of this jointer (to employ his own graphic language) provides for giving each stave "an uniform bevel, and that no bevel at all." Supposing staves to be originally cut in a given curve, afterwards flattened out and finally again curved as they are put together by the hoops, it will be seen a square joint given the staves when flat is, in fact, about equivalent to giving them a bevel corresponding with their original curve. The effect of the practice of Mr. McK. is based on this principle, so that when the staves are set up in the barrel, and the truss hoops applied, the pressure comes in the first instance against the inner edges of the staves, forcing them to arch out to the hoops, making a round and substantial band, instead (as is the case when there is too much bevel) of bringing the pressure on the outer edges of the staves, and causing them to spring inwards in the middle.

In this machine the edges are jointed by rapidly revolving cutters. The axles on which the cutters are carried are mounted in frames, which are separated and drawn together automatically to exactly the proper extent as each stave is fed through. This movement is effected by the aid of a pattern consisting of parts enclosed between two elastic plates of steel, so that by a simple movement the parts are separated and the pattern spread into the form of a wide stave, or contracted into that of a narrow one, and the swell duly increased or diminished to the proper extent with each change.

Fig. 1 is a perspective view of the machine complete, except that the cutter disks are, for perspicuity, represented each with three instead of six cutters. Fig. 2 is a plan view of the pattern and attachments, which lie directly beneath the stave to be shaped; and Fig. 3 a view of the same parts, seen from below. A is the frame of the machine, B and B′ are horizontal cutter disks, mounted on the spindles or upright shafts, C C′, which are carried in the frames, D D′; and *b* are cutters, which are secured on the face of the cutter disks. E

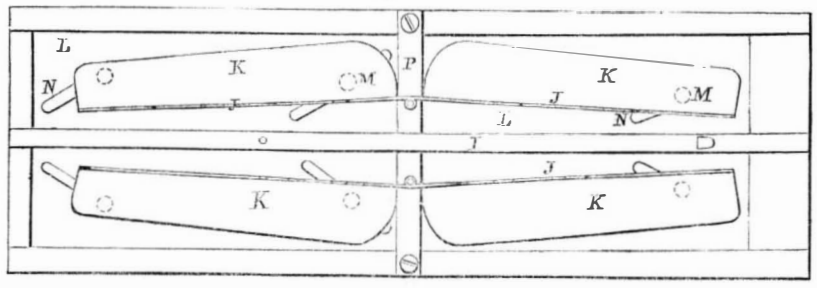
McKEAGE'S STAVE JOINTER.

Fig. 1



is a driving pulley, from which motion is conveyed by belts to the two cutter disks. F is a weight, which, by a cord stretching across under the frame, D, connects to the opposite frame, D′, while a corresponding weight, not represented, on the further side of the machine, connects to frame, D,—the effect of the weights being to draw the frames, D and D′, and consequently the cutter disks, B and B′, together. G represents a carriage to carry the stave, the pattern, etc.; H H are ways on which G travels, and I represents simply a narrow ridge along the top of G, to carry the stave. J J are shaping plates, which form the swelled sides of the pattern. K K are stout movable pieces, on which said shaping

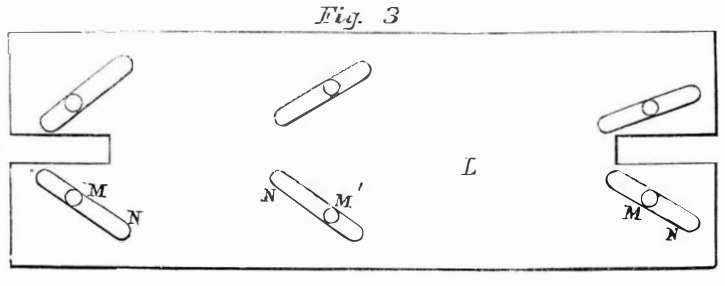
Fig. 2



plates are supported, and L is a flat plate extending across the base of the whole carriage. M M represent pins projecting downward from K K, and N N represent slots in the flat plate, L, in which the pins, M, are received. P is a cross bar, to support J. R is a hand wheel or lever, by means of which the plate, L, is moved forward or back in the carriage. S is a handle, by operating which a wheel is thrown into or out of gear, so as to move the carriage, G, with its attachments, and T is a wheel mounted in a frame, as represented, to aid in holding the stave firmly down in its place.

By examining Fig. 3 it will be observed that the slots near the center of L stand at a

Fig. 3



greater inclination than those near the ends. It follows from this that as the plate, L, is moved endwise in the carriage from right to left the shaping plates, J J, are separated, but not equally at all points, the central portions, or bilge, being spread most. This gives the broad staves more swell, and, in short, gives exactly the form desired to each stave. As the shaping plates have too much rigidity to allow of assuming an angular form, the curve is always gradual, and the hand wheel or corresponding device represented by R, allows of sliding the plate, L, very rapidly and easily, so as to adapt the machine instantly to the jointing of a stave of any ordinary width.

This invention was patented November 18, 1856, and has been in practical use for upwards of a year. The machine appears very durable and simple, and applicable to almost every variety of work, as it is easy to increase the swell of the barrel, by substituting at any time a new plate, L, in which the central slots shall have a greater or less degree of inclination than that represented. A given uniform amount of bevel can also be given to the joint if desired, by beveling the faces of the cutters, *b*.

For further particulars the inventor may be addressed as stated.

Electric Signals for Railroads.

On page 356, this Vol., Scientific American, we presented a description, condensed from the Washington *Union*, of a system of lamps, to be shown along the line of a railroad some four or five miles in advance of a train, the movement of the shades being effected by the electric current. It was there credited to Mr. Solomons, of Savannah; but we have since received a letter from H. Seelhorst, of Philadelphia, in which he claims the invention for himself, and proves that he had a model on exhibition at the Franklin Institute Fair in November last. Mr. Seelhorst's device appears to have been the same as Mr. Solomon's, except that the latter has an extra wheel in his locomotive to set the key, while in the former model, each wheel of the train passes over the key.

The Harvest Time.

The classical sickle is fast retreating to a place among the relics of antiquity, only to be visible in mythical representations of old Father Time, and in the constellations on the celestial globes. For practical gathering of grain, both it and the great improvement thereon known as the cradle, are fast becoming obsolete in the great grain districts of this country. A correspondent of the Chicago *Tribune* went up on the top of a hill called Mount Zion, six miles from Janesville, Wis., and counted on the surrounding plain *one hundred and fifty* reaping machines, each of four-horse power, busily cutting down wheat. There were one thousand men, women and boys following after, binding and shocking up the golden sheaves. He enjoyed a sight worth seeing—grain falling and being gathered up at the rate of two hundred acres per hour.

The waterfalls which surround the valley of Zo Hamite, in California, are believed to be the loftiest in the world. One of them is estimated at two thousand feet high.

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Scientific American.

NEW YORK, AUGUST 22, 1857.

The Great Trans-Atlantic Telegraph.

While the pen is inscribing these lines the cable by which it is hoped to connect the wealth of the Old World with the enterprise and vigor of the New, is probably being rapidly reeled off and allowed to sink on the dark bottom of the Atlantic. It is probable that before the slow progress of the mails can deliver these sheets to a majority of our readers, the general result of the effort will be known and circulated on the wings of lightning to the furthest limits now reached by this great agent of intelligence. If the enterprise proves successful, and if signals are made with the force, certainty and speed requisite for the transmission of dispatches, the event should be celebrated by rejoicings, compared with which the *fetes* in memory of the old Roman victories should sink into absolute insignificance. It is a victory over immense natural difficulties, a leaping over space, an annihilation of time, a defiant trespass on the terrific depths of the ocean; a real *practical* triumph, and one which should, as it undoubtedly will, mark an era in the progress of the world, leading directly and indirectly to consequences which it is at present impossible even dimly to foreshadow.

But our hopes of its present complete success have been weakened by the several latest developments, until they have reached a condition of extreme tenuity. The construction and laying of the cable is an enterprise of immense magnitude, and either in consequence of too much or too little brains, and the presence of too many or too few advisers, the preparations do not seem to have been made in a manner which inspires us with much confidence. There are foremen of foundries in our large mechanical establishments, who, when a mold for a large and intricate casting is approaching completion, examine all the parts and the condition of all the materials over and over again with a carefulness which to the uninitiated seems to border on foolishness; then, when the moment for pouring arrives, with the glowing reservoirs filled with the burning metal, they stand cool, firm, slightly pale, but with every faculty at command, and with tools for every conceivable emergency in their proper places, conscious that so far as ordinary foresight could provide, they are ready for the crisis. There are engineers who appreciate the importance of the mammoth bridges they build, and builders who understand the vessels they construct; but judging by the past, the art of constructing submarine telegraphs has rarely as yet fallen into the hands of one of this class of earnest men, and in the preparations for laying this mammoth telegraph in particular, one of the simplest and most puerile blunders seems to have been committed and allowed to exist undetected until the whole was finished.

We allude to the fact that the two halves of the cable, having been made by two rival manufacturers at distant localities, are twisted in opposite directions, so that at and near the point of juncture, the tendency of the necessarily great strain incident to laying it will be to induce the untwisting of both. In consequence of this or some other considerations not yet distinctly explained, the plan of commencing in mid-ocean and stretching the line in each direction therefrom, has, after some wavering, been finally abandoned, and at last accounts the whole fleet was to sail in company from the coast of Ireland on the 3d or 4th of August, laying the cable as they move along. If it was ever important to avoid the possibility of mischance in consequence of the vessels becoming separated, as also to avoid the possibility of delay in uniting the ends and of compelling the slender thread to hold its weight for a considerable time in mid-ocean, as also to avoid the possibility of shocks and jerks in changing from one vessel to another, all of which the original scheme seemed to provide for, we see no good cause why those reasons do not now exist with the same force. The economy of time in laying the line from two vessels instead of one is certainly as important now as it ever was, for the season has advanced further than was intended before the laying was commenced. It was reported some weeks ago that there was a possibility that the effort might be postponed till next season on account of the fear of autumn storms, and the adoption of this slower system of laying seems very feebly adapted to diminish the liability that the job may extend into September. The gentlemen at the office of the company in this city estimate that the laying will occupy only eighteen or twenty days, so that the fleet should arrive on the coast of Newfoundland by the 23d.

The reverse twist is a single point which leads us to believe that the whole affair has been and will continue to be bunglingly managed. Means have been provided for loading the junction of the two parts in such manner as to provide against untwisting in its descent but fear is expressed that the machinery for paying out the cable is too stout and not sufficiently sensitive to slight strains, so that the degree of tension on the delicate cord will be but feebly indicated. We hope to record the triumph of this experiment; we hope, in common with the millions around us, to enjoy the luxury of foreign news received the same day, and even apparently some hours *before* the events which it reports take place, but our hope strongly partakes of the character with which we hope for the success of a flying machine. It is possible but not probable. If successful in extending across and conveying signals, we shall not cavil at the question of its durability, but consider it a triumph worthy of immortalizing the names of the parties whose wealth and enterprise have carried it forward.

Serious Injuries Little Felt.

It is not generally known how little pain is sometimes caused by a very serious accident. The unconsciousness of the sufferer with regard to the extent of the damage, is probably due in part to the fact that there are comparatively very few nerves *within* the system, but a very sensitive net-work extended over the surface; and in part to a benumbing of the injured portion. The latter alone can be made available to explain the fact that men have often felt little or no inconvenience for a considerable period when fatally scalded. We see it reported that during the recent riots in this city, a man received a bullet in his side, and remained in utter ignorance of his wounded condition for nearly three-quarters of an hour. He walked some distance through the streets, turning several corners, and finally took one of the Eighth avenue cars, and it was not until the car stopped and he attempted to rise and take his departure that he discovered that he was shot. He was assisted to his home, and there attended by a physician, but subsequently died from hemorrhage produced by the wound.

The Harrisburg *Telegraph* details another case, in some respects more singular than this, but which, at last accounts, had not terminated fatally. It appears that a few nights since, a canal boatman named Tomach, while asleep on the deck of his boat, came in collision with a bridge near Highspire, Pa., which struck him on the back part of the head, knocking therefrom a perietal bone which was found shortly after as free from extraneous substances as if it had been extracted by the hands of a demonstrator of anatomy. The wounded man was, of course, instantly aroused by the concussion, and what is most remarkable, rose to his feet, perfectly unconscious of the extent of the injuries he had received by the collision. The slight pain in the back of the head gave no trouble whatever. It was only after he had dressed himself and one of his comrades had found the bone on deck, that he was made aware of the unfortunate mutilation of his caput. After this discovery, the wounded man was taken to Highspire, where a surgeon was summoned, who, after washing the brain, replacing the parts, and arranging the splinters of the adjacent parts of the skull in a proper manner, informed him that was all he could do for him. With this the wounded man departed, in a perfectly rational state, to his home at Loyalsock.

Copper in the Sea.

Some five years ago, two French chemists demonstrated that the ocean contained a notable portion of silver. Recently these and other philosophers have again been at work upon the same subject; following it up, however, much closer, they now tell us that, calculating the whole ocean, it cannot contain less than two millions of tuns of silver in solution. The truth of this statement is verified by experiments tried at various parts of the world—one more famous than the rest by Mr. Field, an English chemist, who lives at Coquimbo, in Chili. The water he analyzed was taken from the Pacific Ocean, and afforded the same result as that which the French chemists obtained from water taken off St. Malo, France, in the English Channel. That the ocean should contain minute portions of every substance of the globe that is soluble in saline water is not surprising; therefore we are, in a measure, prepared for the further discovery that the "old grey beard," ocean, contains also an enormous quantity of copper —a fact recently proved in the laboratory of our London contributor, Mr. Septimus Piesse. The beautiful blue color of portions of the Mediterranean Sea is due, he says, to an ammoniacal salt of copper, while the greenness of other seas is owing to the chloride of copper. The method of extracting silver from the sea is one of simple affinity. Granulated copper being suspended in the "briny waves," any silver salt that is contained therein is decomposed, a portion of the copper is dissolved, and the silver is precipitated thereon, from which it is afterwards parted by the usual means adopted in every laboratory.—By a happy analogy, Mr. Piesse separated copper from the sea by the same process. His experiments were performed between the ports of Marseilles, on the French Mediterranean coast, and Nice, in Sardinia. A bag of nails and scrap iron was suspended at the side of the steamer which plies between these places, and after the first voyage (about twelve hours), copper was indicated to be present on the iron. Four separate voyages, however, were made before the bag of iron was removed to the laboratory; then the quantity of copper was found to be so great that much surprise was shown that the presence of this metal had not been previously discovered, especially when the action of sea water on ships' bottoms has long been known.

Mr. Piesse is continuing his experiments, and we shall not fail to notice what is going on in his laboratory, concerning this singular and wonderful discovery.

Iron in California.

It would really seem that there is no limit to the mineral resources of this highly favored region, which but a very few years ago was an obscure province of Mexico, valuable only for its exports of dried hides.

By the last steamer we received a letter from Jos. P. Paxson, of San Francisco, in which he informs us that within a few days there has been discovered a large bed of iron ore in Placer county, and the specimens which he had examined seemed to be almost solid iron.

"It lies," says the *Press*, "in vast quantities upon the surface of the earth, and an immense amount of it can be obtained with no further trouble than picking it up and loading it into wagons. It has been tested and found to contain *eighty-three* per cent of pure iron. Mr. Lovell, (of Auburn,) the owner, has commenced operations upon it. He passed through town on Thursday last with two wagon loads of the ore destined for shipment to San Francisco. We understand that he has contracted for the delivery of a large amount of it to a San Francisco foundry. This is indeed a most important accession to the list of our mineral resources; and should the railroad be extended to this place, so as to reduce the present high rates of transportation, Mr. Lovell's iron mine will be more valuable than any gold mine in the county."

The same paper asserts that Placer county is unequalled by any other in the State, in the extent of her mining districts, the richness of her mines, or the variety of her minerals. In Green Valley, copper is found in abundance and in great purity all over the hill sides.

If this iron ore can be worked economically, it will be a most important addition to the mineral wealth of the Golden State.

United States Coast Survey.

The great work of surveying and mapping, with all the accuracy afforded by the best modern improvements and processes, the whole coast of the United States, continues to be pushed vigorously forward, the surveying parties being now principally employed on the extreme Eastern coast. The steamer *Corwin* and the surveying schooners *Meredith*, *Hassler*, and *Gallatin* are employed at different points on the coast of Maine; and Prof. Bache, the Superintendent, with the main party, was at last accounts constructing a level, straight road, and measuring a base line at Columbia, in the same State. Few readers may be aware of the great accuracy required and attained in this measurement of a base line. The most of the measures in the survey are taken by triangulation with large and exceedingly accurate instruments, which, mounted on hills, take the bearings of other points, and from comparing the angles, in observations many times repeated, with the instruments reversed and varied to avoid all possible sources of error, the relative distances are ascertained with great accuracy. But, in order to obtain the actual distance between each point in miles, feet and inches, some one of the various lines must be accurately measured, and the process of measuring such base line as it is termed, only six or eight miles in length, frequently employs a gang many weeks or even months. The accuracy is such that a disagreement of three quarters of an inch between two such measurements is esteemed a quite sensible error.

Scientific Association.

The American Association for the Advancement of Science met at Montreal on the 12th inst., but up to the time of our going to press we could find little in the reports, as they appear in the daily papers, which is suitable to condense for our columns. The indirect importance of the facts developed at these annual meetings is probably of considerable moment, but the practical and immediate importance of any portion has generally been extremely small. There have usually been some theories on steam and the like practical subjects which on a hasty reading seem absurd, and speculations on particular varieties of antediluvian oysters, or on microscopic plants found in Spitzbergen, and an adjournment. We shall examine the reports of this meeting with considerable care, and re-publish everything which appears to possess interest.

The New Volume.

We hope our friends everywhere are busy in the formation of Clubs for the New Volume of the Scientific American. The List of Premiums published on the last page of this number will no doubt attract attention, and we expect a largely increased list of new subscribers. We have never appealed in vain to our friends. Now let us have an increase of at least 10,000 subscribers on the new volume; and we promise our most strenuous exertions to make the Scientific American of increased interest and value to all. Our circulation has always steadily increased from year to year until it is now without an equal in its particular sphere.

Subscribers who began with the present volume will please to bear in mind that their subscriptions will expire with No. 52. We trust they will not only be prompt in renewing their subscriptions, but also ask their neighbors to club with them. Our terms offer great inducements for clubbing. See Prospectus.

Patent Right Exchange.

Messrs. Phillips & Parsons have established an agency for the sale of patents at Syracuse, N. Y. They are in the heart of the great Empire State, and ought to do well, as there is always a market for good improvements.

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Vegetable and Animal Development.

There is rarely as beautiful a prose composition, and certainly very seldom a more concise presentation of modern science than that seen in the following, from the pen of Prof. J. W. Hoyt :—

Considered as a kingdom by itself, how full of beauty and wonder is the great vegetable world. Created first, and exerting its purifying influence on the poisonous atmosphere of the renewed earth for ages before the advent of man, it has ever been a mediator between him and the otherwise unavailable forms of inorganized matter. For untold centuries the needed organic elements had been weltering in chaos, but there was no power of the vital forces competent to mold them into human form. God had decreed a slow and gradual development, by means of successive steps, as well for organizable atoms, as for geological strata and the grander groupings of worlds into systems. And so, after the renewing energy of Omnipotence had dissolved the thick veil of darkness that enveloped the earth, and brought to bear the vivifying sunlight of heaven, and the softer radiance of kindred spheres ; after the " waters under the heavens" had been " gathered together into one place," and the dry land made to appear, His voice was heard again, saying, " Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind."

Then was there a new joy among the atoms of the earth and air. Vitality was come ! and the lifeless clod might feel the subtile flow of nature's quickening forces, become a *living* thing, and in the golden future minister to the greater needs and higher pleasures of the god-like man that was to be—the noxious vapors of the air might now become the sweet nectar of glowing fruits and the spiritualized fragrance of ambrosial flowers. Even the ruby and diamond were glad, choosing rather to *live* in the flower of the blue bell, or e'en in fields of waving wheat and rustling corn, than, bound by geometric law severe, remain a lifeless jewel !

And so, as the new year revolved, countless germs unfolded, and the earth was clothed with beautiful verdure. Added years produced their giant growth of forests, such as we shall never see, and to-day the same wonderful transmutations continue. From the tall, slender palm, waving its coronal of luxuriant leaves in the refreshing breezes, far above the hot vapors of the tropical forests, to the simple moss, that clothes the stony wall of the damp grotto with its velvet verdure; from the magnificent pine of California, that sublimely lifts its brawny arms three hundred feet above the earth, to the microscopic plant that covers our window pane with irredescent hues; from the splendid Victoria Regnia that cradles its rosy petals in the deep quiet waters of Guiana, to the modest violet growing on the hillside —what a wonderful " play of fashioning," what " wealth of forms !"

From the old Baobab, the concentric rings of whose trunk have tallied six thousand years, the beginning of whose growth may have been prior to the advent of man upon the earth, to the undefined fungus, whose existence is begun and ended in a single summer's night, what differences of duration, consistence and texture. And yet they all have a single type and common origin, beginning every one with a simple little cell, to the unaided eye invisible.

While, therefore, these circumstances very greatly add to the interest of the subject, the identity of all, in the generalities of organization, immensely reduces the labor of study requisite to a knowledge of their physical constitution, and the physiological laws involved in their growth. Indeed, this identity is not confined to the individual plants in their relation to each other, but really, to a surprising extent, is demonstrable as existing between plants and animals, so that, minutely examined, science is utterly unable to distinguish between them ; and even when viewed less closely, the resemblance is so remarkable as to render it exceedingly difficult to establish ist inct lines of demarcation.

Doubtless, as Dr. Gray remarks, this uncertainty is attributable to our imperfection of knowledge, rather than to any confusion of the characteristics of the two kingdoms.

In the infancy of natural history, the power of locomotion and the presence of a stomach, were supposed to characterize the animal ; but it is now known that sponges, and other allied classes of animals, are deficient of both, while some plants, as the Fuci, possess a certain kind of locomotive power, and others add a sort of stomach.

Again, in more recent times, some thought to have discovered a means of determining their distinctive character by assigning nitrogen to the animal, and denying it to the vegetable. Modern discoveries, however, have demonstrated that nitrogenized matter is essential to the growing parts of plants, so that this circumstance fails us also. Nor is sensation a distinguishing characteristic, since the " sensitive plant," and some others, are superior in their sensibility to numbers of recognized animals.

Microscopically examined, in their secondary stages of development, a difference is said to be discoverable in primary structure, the cell proper of the plant remaining well defined throughout, while in the animal every trace of the original cell will have disappeared. Still, in the earlier stages, such possibility is quite out of the question.

Finally, there are no distinctions palpable to the senses, no distinguishing physical differences—only physiological or physio-chemical, and upon these we are forced to rely. The plant feeds on inorganic matter, the animal solely on organic ; the plant inhales carbonic acid gas, and decomposes it, appropriating the carbon and rejecting the oxygen ; the animal *re*-composes carbonic acid, and exhales it, so that what is food for the one is poison to the other. These are the chief points of difference between them.

American Reapers in England.

From the London *Times'* report of the exhibition of the Royal Agricultural Society, which took place at Salisbury, Eng., on the 17th of July, it appears that J. E. Heath's reaper and mower, patented through our agency, and published on page 120 of volume 11, Scientific American, gained the first prize. The invention was assigned to Henderson & Caryl, of Sandusky, O., who patented it in England, and it is one of the now multiplying examples wherein the exportation of American inventions previously secured by patents abroad has resulted in considerable advantage to their proprietors. The following extract from the *Times*, shows how the machine is viewed by that great exponent of public opinion :—

" The trial of reapers took place upon a field of ripe rye, near the show-yard, the style and expedition of the work assuring the light-land farmer that he need not suffer a single acre of corn to shake unreaped for lack of harvest men, (as was extensively the case last year) and affording promise to the grower of heavy and storm-broken crops that he may yet hope to possess a machine able to shear without wasting, and to save both expense and the more momentous matter of time in his laborious harvesting. Undoubtedly, the greatest novelty in this department, and one of the most meritorious and valuable pieces of machinery in the whole show, is the " Eagle " combined reaper and mower, invented by A. H. Caryl, of Sandusky, Ohio, U. S., and exhibited by H. Clayton, of the Atlas Works, Dorset square, London. In this machine we see just the simplicity of parts and consequent lightness, the small liability to derangement in working, and yet the greatest facility of accommodation to uneven surfaces of ground and irregular and tangled cropping, which recommend it as emphatically a tool for the farmer. The framing, of the most compact description, is carried by bearings upon the axle of the main carriage wheel on the near side of the machine, the horses yoked to a pole preceding it, while the driver is mounted on the seat behind. By this arrangement, and by the adjustment of the line of draft, the weight is balanced, and the driver can elevate the front or cutting edge eight or ten inches—so as to clear any obstacle, or cross a furrow —by simply depressing the hind part with his foot. The objectionable side draft or thrust of most machines is in a great measure obviated by the fixing of the off-side small carriage wheel somewhat more forward than, instead of abreast of the main wheel. The cutters are simple in form and construction, yet very effective. They are acute, somewhat like Hussey's, but sliding to and fro above the projecting " fingers," which are also sharp, and thus form shears or scissors. A spring bar presses the knives firmly in their places, and prevents all clogging, and the vibrating motion of the cutter bar is much slower than in other machines. In place of the spur wheels and pinions so multiplied and complex in most of our reapers, there is here a neat arrangement of cams and slides, and not a single cogged wheel to be found. It operates beautifully as a mowing machine for grass or other crops ; and when employed to reap white corn, a curved platform is attached, on which a very ingenious yet simply-constructed automatic rake collects and delivers the corn in sheaf bundles in the rear of the machine, out of the way of the next course. This machine received the £200 prize in Massachusetts, after a three days' trial, in 1856. As a mower, it has gained the first prize in Salisbury. Messrs. Burgess & Key's reaper, with the screw platform, and also an addition in the form of a revolving conical roller, wrapped with a screw in place of the old dividing-iron, to lay the up-standing corn upon the machine, has been rewarded ; as also Crosskill's Bell and Lord Kinnaird's. Dray's Hussey, with the tipping platform, which has generally been a favorite, and considered as the rival of Burgess & Key's, has been distinguished only with a commendation, the judges being resolved to patronize the principle of a self-acting delivery."

The Chinese Sugar Cane.

Great quantities of this species of the sugar cane have been planted, and under the influence of the recent growing weather, the cane is rapidly advancing towards maturity. The question whether the product is crystalizable still remains open—a fact which seems strongly to argue that it is not practically, as were it otherwise, some of the sugar would have been exhibited in a dry state long ere this. A sugar-refining house in Philadelphia lately examined a sample of the syrup, but in their report, which is published as favorable to the claims of the *Sorgho*, they say that their investigation has been but qualitative, and merely to ascertain whether there was any crystallizable sugar contained therein. To this purpose they subjected it to the low power of a microscope, which revealed regularly formed rhombohædric crystals of cane sugar. This leaves us still nearly as much in the dark as ever.

Old Ironsides.

The frigate *Constitution* was at Portsmouth last week, where she is to be taken into the dry dock at the Navy Yard. This favorite frigate has been now so extensively repaired at different times that very little remains of her original wood ; but the individuality of the ship remains, and the memory of her victories awakens some of the proudest feelings connected with our navy.

Cod Fishing on the Pacific.

An Oregon or rather a Washington Territory paper claims that the inlet at the extreme north of our Pacific coast, known as Puget's Sound and Fuca's Straits, abounds in cod fish, and that with the same capital invested, cod fishing might be prosecuted as successfully there as at the most favored points on the Atlantic coast.

Quick Passage.

According to the Hamilton *Banner* the *Indian*, on a late homeward voyage, made the trip from Quebec to Liverpool in nine days and eleven hours. This is one of the quickest trips on record, and only excelled as yet by the *Persia's* trip, which we recorded a week or two since.

The Hay Crop.

In this section the crop of grass, always one of the most important to all classes, is very liberal, but the weather for curing it has been peculiarly unfortunate. The country is full of hay, but a great part of it is more or less damaged by exposure to bad weather.

Pearl Muscles.

Messrs. Editors.—Some time since I noticed in your paper a communication from a correspondent, stating that our western streams abounded with the shell fish in which pearls were found, and being near the creek in this place, I had the curiosity to make an examination. I found plenty of the muscles, but there was a most deplorable scarcity of any kind of valuables. I find there are two kinds of muscle. The most numerous are from three to five inches in diameter, with a thick shell, the outside of a rough and dark brown appearance, the inside a changeable purple, having all the appearance in reality of the mother of pearl ; the flesh looked like that of the oyster, and on being torn open discharged a quantity of white milky substance. The other kind are about four inches long and two inches wide, with dark green stripes running from the hinge to the edge, the surface is smooth and polished, and looks as if it had been varnished ; the shell is thin and almost transparent, so much so that you can with little difficulty read through it ; the flesh is about the same as the other. Now I wish to know if the pearl is found in either of these, and if so, which ? Tell me, if you please, what is the general appearance of the pearl-producing shell fish, and how large they average ? E. D. B.

Columbus, Wis., Aug. 1857.

[Perhaps some correspondent can give the information desired, and it would no doubt be interesting to a great many. The fact that pearls are found in both fresh and salt water shows that the production of the treasure is peculiar to no one particular class, but it is very probable that the search in one of these varieties would be more successful than in the other.

Imitation of Black Walnut.

Messrs. Editors—I noticed in your last issue that one of your correspondents inquires how pine may be stained so as to imitate black walnut. Now as I have done considerable of this, and as very often pine wood is desirable where the wood of walnut is not, I offer the following directions for an imitation which I have found satisfactory, should you think them worth publishing :—

Let the surface of the wood, after being thoroughly sand papered, be washed with weak alum water, and then treated with linseed oil colored by burnt umber and red lead. The umber should be thoroughly burned, but the coloring matter not made too strong. It is better to have it rather light, and renew the application. When this has sufficiently dried, go over the surface with a strong sizing of glue (transparent), and then use two coats of good copal varnish. Treated thus, any good grained pine will bear a very close resemblance to walnut, and the surface is nearly as hard. R. Whittingham.

New Berlin, N. Y., August, 1857.

Rich's Water Wheel.

Messrs. Editors—I saw a notice in your last week's paper, requesting to know if R. Rich's patent water wheel was extended ? I would inform you that it is extended to July 8, 1863. It was patented July 8, 1842.

Reuben Rich.

August 6, 1857.

Colors for Magic Lantern Pictures.

A correspondent inquires as follows :—"Can you (or can any of your numerous readers) furnish me with information as to the nature of the colors used, or suitable to be used, in transparent painting on glass for the phantasmagoria ? I have seen and tried several receipts, but found them all fallacious. Some of the colors tried have been varnishes, some gum colors."

The Annual Fair of the Middlesex Mechanics' Association will be opened at Lowell on the 10th of September. It will probably be an exhibition worthy of the great manufacturing district in which it is locat d.

A glass bottle and cork establishment is under way in California, for the purpose of furnishing the means of bottling up the native wine. Cork trees grow in Los Angelos county, in that State.

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R. W., of Ohio.—It seems to us you are wrong in calling your invention a substitute for a crank, for to be that, it should be capable, not only of converting rotary into reciprocating rectilinear, but of converting reciprocating rectilinear into rotary motion. However this may be, the device is not new. We have had the same thing in our office applied to the header of a nail machine, also to the punch of a nut machine, and numerous other applications of it might be quoted.

Thos. Allen, of Alexandria, Tenn., wishes to purchase a machine for drawing or shaving shingles.

E. A., of Pa.—You inquire what we would charge to publish a favorable notice of your improvement, together with 100 copies of our paper. We would inform you that it is not only entirely contrary to a long established rule of this office, but it is also against our principles of doing business to publish articles for pay. Our advertising columns only are open to the publication of paid matter. The notices which appear from week to week are voluntary on our part, and are not paid for. If you wish an engraving of your improvement, we shall be happy to prepare it for you, and will charge you what it costs, and for its insertion in our columns there will be no charge. We should speak of your invention according to our own judgment, without reference to your particular views in relation to it.

R. H. U., of D. C.—We have received and examined the model of your water gage for ships, &c. We have either seen or read of the same thing before, but do not recollect when or where. Our opinion is, that even though this device should be new in its application to navigable vessels, it would not be patentable, as it is the same device that is sometimes used in steam boilers, and other vessels containing fluids to indicate the hight of water in them.

T. B. L., of N. C.—As the upper portion of the well is liable to cave in, we should advise you not to trust to the simple lining of hydraulic cement, but to continue the brick or stone all the way up. Your lubricator is a very old contrivance, and a description of it has been published in one of the early numbers of the Sci. Am., though it was not a new thing at the time of its publication.

W. B., of Cal.—We are of opinion that Asbestus could never by any mechanical process be reduced to a pulp suitable for the manufacture of paper, and a chemical process would be likely to change its fibrous character.

J. W. B., of Ky.—We do not give opinions as to infringements. We leave that department to the lawyers.

D. F. of Pa.—This correspondent asks the cause of and remedy for the bad taste given to milk by standing in a partially open vault below his cellar floor. We can suggest neither. Who will enlighten us?

M. A. B., of Iowa.—The Scientific American is the most voluminous record of inventions that exists in this country. We refer you to its pages for the remedy you seek.

J. H., of Ohio.—You would save nothing by using a condenser to condense the steam evaporated, as the steam takes up none of the sugar, and by returning the water of condensation to the kettle you would be undoing what you have accomplished by evaporation. You may fancy the water to possess "virtue" on account of its sugary smell, but you will find it tasteless on trial.

J. W. W., of N. Y.—There is nothing patentable in your invention. A water packing has been used in the stuffing boxes of steam engines, and that alone would be sufficient to prevent your obtaining a patent. We believe, however, the same thing has been applied to pistons by the turning of grooves therein as you describe, though we do not now recollect an example of it. When applied to stuffing boxes two india rubber rings are used, with a metal lantern ring between them to keep them apart, and form a cavity for the water.

H. H., of Conn.—We do not know any such work as the Jewelers' Hand-Book.

W. C. S., of Pa.—We cannot tell you how many revolutions per minute the cylinder of a threshing machine should make to thresh well, and not endanger the machine. It depends very greatly on the style of machine, the size of the cylinder, etc. You must form an estimate from observations on existing machines.

D. N. H., of Pa.—In your apparatus you take a round-about way of employing your water, viz., using the fall of water to effect the compression of air to drive an engine. Why not use the water at once to drive the engine, making what is known as the water-pressure engine? If you have fall enough to compress the air you have fall enough for this. Your apparatus would be a complicated affair to use in connection with an engine, and nothing would be gained by it.

R. L., of Pittsburgh.—You inquire whether, in case of the renewal of a patent, an assignee under the original grant has a right to make and vend under an extension? We answer no. The term "for Letters Patent that are or may be granted," has reference only to the original term—the patent being extended for the benefit of the original inventor. Upon the question of use, it has been decided that a machine may be used under the extended patent until it is worn out.

Money received at the Scientific American Office on account of Patent Office business for the week ending Saturday, Aug. 15, 1857:—

J. McL., of N. Y., $30; J. W. B., of Ill., $25; E. M., of Conn., $25; G. T. J., of Ga., $30; M. D., of N. Y., $30; M. M. W., of Ohio, $30; R. W. S., of N. Y., $30; O. L. C., of Ill., $30; C. A. H., of Mich., $30; J. F. B., of Ill., $35; H. F. V., of N. Y., $30; J. M. C., of N. Y., $25; J. H F., of Cal., $20; E. G. O., of N. Y., $10; J. H., of Ill., $30; D. C. T., of Wis., $40; C. W. S., of N. Y., $13; S. & C., of Pa., $25; E. K. C., of Mass., $30; S. P., of Ill., $30; J. D. M., of Mass., $55; J. W. R., of Cal., $25; C. C. J., of Ohio, $55.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Aug. 15, 1857:—

W. S., of Ill., S. & C., of Pa.; J. F. B., of Ill.; D. C. T., of Wis.; C. W. S., of N. Y.; J. M. C., of N. Y.; J. McC., of N. Y.. A. H., of Conn.; G. S., of N. Y.; R. H. L., of Pa.; M. N. H., of Ind.; B. & H., of Ill.; E. M., of Conn.; H. W. C., of N. Y.; W. & H., of Ala.; A. L., of N. Y.; A. J., of Mass.; S. M. P., of Pa., (2 cases); C. N. L., of N. Y.

NOTICE.

Back Numbers of the Present Volume—Almost every mail brings letters of inquiry from our patrons for certain numbers of the Scientific American, which we are unable to supply. To save subscribers the trouble of writing for such numbers as we have not got, we append a list of the numbers which are entirely exhausted in Vol. 12:—1, 2, 3, 4, 6, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 23, 24, 27, 30, 31, 35, 36, 39. Those numbers that are not specified above we can supply, and shall be happy to do so to those who have missed them.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the Scientific American, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Their experience is of twelve years' standing, and their facilities are unequalled by any other agency in the world. Consultation may be had with the firm between nine and four o'clock daily, at their principal office, 128 Fulton st., New York. Our branch offices are corner of F and Seventh sts., Washington, D. C., Nos. 66 Chancery Lane, London, 29 Boulevard Saint Martin, Paris, and 3 Rue Therrsienne, Brussels. Circulars of information concerning the proper course to be pursued in obtaining patents through our Agency, the requirements of the Patent Office, etc., may be had gratis upon application to the principal or either of the branch offices. Communications and remittances should be addressed to MUNN & CO.,
No. 128 Fulton st., New York.

CAUTION—The public are hereby cautioned against purchasing any interest in a patent granted to Wm. H. Walton, dated 9th December, 1856, and re-issued to him, except from Wm. H. Walton personally, who alone has the legal right of disposing of the same. For further information address WM. H. WALTON & CO., 191 and 193 Chrystie st., New York. 49 2*

MECHANICS' FAIR—The fourth Exhibition of the Worcester County Mechanics' Association for the Encouragement of Manufactures and Mechanic Arts, will be opened at the Mechanics' Hall, Worcester, Mass., on Thursday, Sept. 17, and continue two weeks. The Association respectfully invite the mechanics, manufacturers, artists and inventors of Massachusetts and adjoining States, to furnish such specimens of their various productions of labor and skill as they may wish to present to the notice of the public through the medium of a Fair.—Steam power will be furnished for operating such machinery as may be presented for exhibition. Silver and Bronze medals, Diplomas, and gratuities in money will be awarded to articles of merit, and a copy of the Reports furnished to each contributor. It is desirable that all articles intended for the Exhibition should be presented on or before Wednesday, Sept. 16th. Communications addressed to the Superintendent will be promptly attended to. PUTMAN W. TAFT, Sup't. 49 2*

REED'S PATENT STEAM ENGINE—This is an improved engine, for which patents have been granted and first prize medals awarded to the inventor, both in the United States and Europe. It was exhibited in the Palace of Industry at Paris, where it was tested by the principal engineers in Europe, and proved its superiority over other engines, economizing about 20 per cent in fuel, and about the same in oil, repairs, &c. This saving is made by letting the steam in and out on both sides of the cylinder at the same time, doubling the size of the ports, and removing the pressure from the valves. These engines have been in operation over three years, and there are now over two hundred running with entire satisfaction, and the demand such that we have established an extensive manufactory, and are prepared to deliver at the shortest notice engines and boilers complete, of all sizes, from 2-horse power to 200. The smaller ones, up to 12-horse power, are placed upon the boilers, with all the pipes attached, ready for operation. The boilers are built on an improved plan, being horizontal, with tubes the whole length, making them very effective and durable. The fire is in a flue passing through below the center, and the heat returns through the tubes, giving the greatest amount of fire surface in the strongest and most compact form. The whole is mounted on wheels, convenient to ship to all parts of the country, and can be put in operation without the assistance of experienced engineers. These engines can be seen in operation by calling on, or further information had, by addressing REED & BIRKBECK, Fulton Foundry, Jersey City, N. J. 50 3oam

VAIL'S PORTABLE STEAM ENGINES and Saw Mills—Knowles' patent Saw Mills, which will save 100 per cent more lumber for the same power than any other mill in use, Saw and grist mill irons, sugar mills, Bogardus' iron horse powers, saw gummers, forgings and castings, wood-working and labor saving machinery of every description. Vail's Speedwell Iron Works, Morristown, N. J. JOHN H. LIDGERWOOD & CO., 9 Gold st., N. Y. 1*

THE PRACTICAL METAL WORKER'S ASSISTANT, containing the Arts of Working all Metals and Alloys, forging of Iron and Steel, &c., with the application of the Art of Electro-Metallurgy to manufacturing processes; collected from original sources and from the works of Holtzapffel, Bergeron, Leupold, Plumier, Napier and others, the whole arranged with numerous engravings on wood—by OLIVER BYRNE. One volume, 8vo. Price $4. Sent by mail free of postage.
HENRY C. BAIRD, publisher,
50 2* Philadelphia, Pa.

INSTRUMENTS—New Catalogue, Third Edition, with 250 illustrations of Mathematical, Optical and Philosophical Instruments, furnished gratis and sent by Mail free of charge to all parts of the United States. C. T. AMLER, (formerly Amsler & Wirz,) 635 Chestnut st., Philadelphia, Pa. 50 7eow*

THE LITTLE BRICK MAKER—The new machine is now reduced in size, so as to be driven by one man. It takes the rough clay, previously one night in soak, tempers and molds 420 bricks an hour, attended by two men and four boys. The brick is beautiful.—Price $65. The larger machines, worked by a horse, making 7,000 per day, $150; 10,000, $200; by steam 16,000, $250; 25,000, $400. For further particulars in a pamphlet containing full instruction on brick-setting and burning, address FRANCIS H. SMITH, Baltimore. 50 2*

F. W. HOWE'S PATENT GOVERNOR—Patented July 28, 1857. Neat and compact in form, it is adapted and easily attached to engines and water wheels of every kind. It excels all others in use, in that it begins to act the instant there is the slightest variation in the moving power; and when applied to an engine keeps it at a uniform speed without the aid of an engineer, whatever the variation in the power used, or in the pressure of the steam—whether the engine is working at its least or its greatest capacity. Governors made and shop rights sold. Address the patentee at Newark, N. J. 1*

THE BEST and cheapest Portable Hay Press is made by W. W. DINGEE & CO., York, Pa. Five per cent deducted from cash price on all presses ordered in August, to be furnished any time in 1857. Write for a circular. 1*

TO INVENTORS—A gentleman who has had considerable experience and success in the management and sale of patent rights, offers his services to inventors on equitable terms, or he will buy a good patent, or an interest in one. References exchanged. Those of the advertiser are of the highest standing in commercial and scientific circles. Address L. M. W., Box 170, Tribune office, New York. 1*

SWISS DRAWING INSTRUMENTS—A full stock of these celebrated instruments always on hand. Catalogue gratis. C. T. AMSLER, (formerly Amsler & Wirz,) Philadelphia, Pa. 50 7*eow

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DR. D. BREED, late Assistant and acting Chief Examiner in the U. S. Patent Office, has established at Washington, D. C., a chemical laboratory for experiment and analysis, in order to test and improve processes of manufacture, and mechanical devices employed in the chemical arts, and to procure and defend patent rights. After many years devoted to chemistry (having studied in the German laboratories) Dr. Breed feels confident in offering his services as a practical chemist to inventors and others interested in the chemical arts and manufactures. 50 4*

THE TENTH ANNUAL EXHIBITION of the Maryland Institute, Baltimore, will be opened on the 29th of September, and continue to the 24th of October, 1857. Goods for competition and premiums will be received from 22nd to 24th of Sept. inclusive, afterwards for exhibition only. Mechanics, manufacturers, inventors, artists and others, of the entire country, are respectfully solicited to contribute to the same, and assured that every effort will be made to display their works to the best advantage. Circulars containing rules, regulations, &c., will be promptly furnished by application to JOHN S. SELBY, Actuary.
49 tf JOSHUA VANSANT, Chairman.

$100,000 WORTH OF INVENTIONS for sale by JAMES W. CHAPMAN, Trinity Springs, Martin co., Ind. 49 2*

PROSSER'S PATENT SCROLL SAW has neither sash, slides, nor springs; can be run at thrice the usual velocity, working much more smoothly and rapidly than any other saw. Price complete, on iron frame, $60. LANE & BODLEY, manufacturers of wood-working machinery, Cincinnati, Ohio. 49 4*

"People kill themselves by eating, by drinking, by labor, by sleep, by want of sleep, by sexual excess, by taxation of brain, by money-making and spending, by extended violation of physical law, in almost every direction. Now the Water Cure Journal contemplates a rectification of the general habits of the people in all cases where correction is needful."—Dr. Jackson.

THE WATER CURE JOURNAL—Devoted to Hydropathy, its philosophy and practice; to Physiology and Anatomy, with engravings; to Bathing, Dietetics, Exercise, and to all those laws which govern life and health. Monthly, only $1 a year. Address FOWLER & WELLS, 308 Broadway, New York. 49 2

MECHANICS' FAIR IN LOWELL—The Second Exhibition of the Middlesex Mechanic Association will open in Lowell, Mass., September 10, 1857. Contributions will be received until September 5. For information address JOHN W. SMITH, Sup't. 49 3*

FOR SALE AT FLUSHING, Long Island, N. Y.—The business and machinery of John C. Quarterman's estate, consisting of a six-horse power steam engine, a ten-horse power boiler, lathes, saws, boring and drilling machines, rounding machines, saws for scroll work, and a machine for making shovel, coal hod and pail handles, together with all the tools and fixtures. The business has been established from the year 1851, and to an ingenious mechanic opens a good prospect. For particulars apply to JAMES QUARTERMAN, 114 John st., New York. or to SARAH ANN QUARTERMAN, Flushing, L. I., who resides on the place. 49 6

TO HOUSEKEEPERS—I own the copyright of the celebrated 100 Metropolitan Hotel recipes for Cooking, Baking, making Creams, Pastry, Preserves, &c., &c, and will send them by return mail (free of postage) on receipt of four letter stamps. J. R. STAFFORD, 16 State st, New York. 49 4

MACHINISTS' TOOLS—CARPENTER & PLASS 479 First ave., New York, have constantly on hand and make to order all kinds of machinists' tools of superior quality, particularly adapted for railway companies, steam engine builders, &c., whose orders are respectfully solicited, and shipped at short notice—terms moderate. Also a few second-hand tools, one 16 ft. and one 8 ft. iron planer, two slide lathes, 12 and 16 ft., and one 8 ft. face lathe. 49 2*

TO PATENTEES AND PURCHASERS—The subscriber will examine or experiment on the working of new machines and processes, prepare elaborate reports, and give professional opinions for public or private use. Refers to Munn & Co. THOS. D. STETSON, Consulting Engineer, 5 Tryon Row, New York. 45 tf

INCRUSTATION IN STEAM BOILERS—A late patent for removing and preventing incrustation in steam boilers. It has been thoroughly tested, and in every instance has given full satisfaction, by removing all old scale, and preventing the formation of new, keeping the boilers entirely free from incrustation without injury to the iron. Satisfactory proof of its good effects will be given to any wishing to purchase. For sale in individual or State rights. Address Messrs SPENCER, BOARDMAN & SPENCER, Lancaster, Pa., sole agents for the United States. 48 4*

WANTED—A second-hand Locomotive Steam Boiler, of about thirty horse power, capable of working at 75 lbs. pressure. Address, stating dimensions and price, D. POWERS & SONS, Lansingburgh, N. Y. 48 3*

IRON AND BRASS FOUNDERS—Three patentable inventions for sale. One a mold from which a number of clean metal castings can be taken. Address THOMAS HODGSON, Beach Place, Brooklyn, N. Y. 48 3*

SECOND-HAND Steam Engine and Boiler for sale.—One 8-horse Upright Steam Engine, Boiler 30 inches diameter, 25 feet long, nearly new, and in good running order. For particulars address H. B. MATHER, West Norwalk, Fairfield co., Conn. 48 3*

FISHERMEN—If you wish to catch any kind of fish as fast as you can pull them out, get Gardner's Secret Art for Catching Fish, sent for $1. N. R. GARDNER, Peace Dale, R. I. 47 4*

WOODWORTH PLANING MACHINES of superior style and workmanship, of various sizes, and the latest improvements. Also Steam Engines and Boilers, Sash and Blind Machinery, Lathes, Planers, Drills, Belting, and all kinds of Machinists' Tools on hand, and for sale at the Machine Depot, 163 Greenwich st., New York. A. L. ACKERMAN. 45 8

A WALLET safe against pickpockets or loss sent free for $1. DICKINSON & BATE, Hudson, Mich. 47 4*

E. G. CUSHING'S Unequalled Straw and Stalk Cutter.—For finished work, or the right of territory, address the inventor, Dryden, Tompkins county, N. Y. 44 10*

CAST STEEL WIRE DRAWING at the Union Works, Paterson, N. J. Orders solicited and carefully filled by CHAMBERLIN & CO. 43 13*

HARRISON'S GRIST MILLS—20, 30, 36 and 48 inches diameter, at $100, $200, $300, and $400, with all the modern improvements. Also, Portable and Stationary Steam Engines of all sizes, suitable for said Mills. Also Bolters, Elevators, Belting, &c. &c. Apply to
29 e3wtf S. C. HILLS, 12 Platt st., N. Y.

INGERSOLL'S IMPROVED HAY PRESS—The best portable Hand Power Press in use for the purposes of Baleing Hay, Straw, Broom Corn, Husks, Hair, Hides, Moss, Hemp, Rags, Wool, Cotton, &c. Prices from $50 to $200. Also an improved press for ornamental composition work. Price $50 and $65. Also Ingersoll's Patent Tree Saw, for sawing down trees. This is a perfectly portable machine, and has been thoroughly tested during the past winter. Price $75. All orders filled promptly. Also State and County rights for sale. Circulars containing full information sent on application to the FARMER'S & MECHANIC'S MANUFACTURING CO., Green Point, Kings co., L. I. 44 4*eow

WOODWORTH'S PATENT PLANING MACHINES of every kind and all prices. A large assortment on hand; and I am prepared to construct any machine to order from ten days to two weeks, and guarantee each machine to be perfect in its construction, and give purchasers entire satisfaction. The patent has expired, and will not be renewed. I make this business exclusive, manufacturing nothing but the Woodworth Machines, and for that reason can make a better article for less money; and with my fifteen years' experience I fully guarantee each machine to come up to what I am willing to recommend, that is, that each machine shall be more than equal to any other manufactured for the same price. JOHN H. LESTER, 57 Pearl st., Brooklyn, N. Y., three blocks above Fulton Ferry. 35 tf

PEARSON CROSBY'S PATENT RE-SAWING Machines.—The Crosby patent for re-sawing lumber, having been re-issued April 28, 1857, and having purchased the right to the same for the State of New York and Northern Pennsylvania, the subscriber is prepared to sell rights to use the machines in the greater portion of the above named territory, and also to furnish the public with these machines. Having re-built my machine manufactory—which was destroyed by fire on the 9th of Feb. last—I continue to manufacture and have on hand for sale, Woodworth's Patent Planing Machines, from $150 to $1,500, and of a quality unequalled by any other manufacturer. Also the separate parts of the machine, namely, planing knives, side tools, side cutter heads, cylinders, &c., as well as the above named Crosby Re-sawing Machines. JOHN GIBSON,
48 13* Planing Mills, Albany, N. Y.

STEAM PUMPS, Boiler Feed Pumps, Stop Valves, Oil Cups, Cocks, Steam and Water Gauges, sold by JAMES O. MORSE & CO., No. 79 John street, New York. 41 13

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ENGRAVING ON WOOD and **MECHANICAL** DRAWING, by RICHARD TEN EYCK, Jr., 128 Fulton street, N. Y., Engraver to the Scientific American. 16tf

TO INVENTORS AND MANUFACTURERS—Rooms with power, for the exhibition of machinery, can be had in the Depot Buildings, corner of Elm and Franklin sts. The location is extremely desirable for its prominence and convenience to the business part of the city. Apply to T. BENNETT, on the premises. 43 tf

MACHINE BELTING, Steam Packing, Engine Hose.—The superiority of these articles manufactured of vulcanized rubber is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. NEW YORK BELTING AND PACKING COMPANY John H. Cheever, Treasurer, No. 6 Dey street, N. Y 40 tf

PECK'S PATENT DROP PRESS—The best machine in use for stamping jewelry, ornaments, tin ware, swedging iron, &c. A supply of all sizes on hand and made to order by the patentee, MILO PECK, New Haven, Conn. State rights for sale. 48 8*

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STEAM ENGINES, Steam Boilers, Steam Pumps, Saw and Grist Mills, Marble Mills, Rice Mills, Quartz Mills for gold quartz, Sugar Mills, Water Wheels, Shafting and pulleys. The largest assortment of the above in the country, kept constantly on hand by WM. BURDON, 102 Front st., Brooklyn, N. Y. 46 tf

L. D. GOODWIN'S celebrated Patent Central Vent Water Wheel. For wheels or the right of territory address J. W. DWIGHT, Dryden, N. Y., or E. C. BRAMHALL, 190 Fulton, N. Y. 44 10*

LAP-WELDED IRON BOILER TUBES.—Prosser's Patent.—Every article necessary to drill the tube-plates, and set the tubes in the best manner.
44 26 THOS. PROSSER & SON, 28 Platt st., N. Y

WOODWORTH PLANERS, STEAM ENGINES, &c.—Twenty-seven years' experience enables me to furnish Woodworth Planers for surfacing one or both sides, planing and matching, rabbiting, beading, or for moldings or clapboards, in any variety of beautiful construction and great power. Ample evidence of the superiority of my machines will be furnished from parties that have other machines in the same mill. Every machine will be accompanied, if desired, with a written warrantee. As some parties have been supplied with machines of another make when they supposed they were getting mine, I would advise that purchasers should buy none unless my name is on it full. Matteawan steam engines, machinists' tools, cotton and woolen, sash-blind and door machinery, leather banding, &c., furnished at the manufactory at Matteawan, N. Y., or at 62 Courtland street, N. Y. S. B. SCHENCK, Agent. 39 tf

THE BEST PLANING MACHINE IN THE World—Patented Nov. 21, 1854 and Nov. 13, 1855. These patents were obtained for improvements upon the celebrated Woodworth Planing Machine. They received a Gold Medal at the last exhibition of the Massachusetts Charitable Mechanics' Association. Machines of all kinds and sizes constantly on hand, which are warranted to give entire satisfaction, and to be superior to any now in use. For further information address the patentee, JAMES A. WOODBURY, No. 1 Scollay's Building, Court st, Boston, Mass. 42 13*

OIL! OIL! OIL!—For railroads, steamers, and for machinery and burning—Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough, and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer.
F. S. PEASE, 61 Main st., Buffalo, N. Y.
N. B.—Reliable orders filled for any part of the United States and Europe. 40 tf

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters Chucks &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co., New Haven, Conn. 40 tf

HARRISON'S 30 INCH GRAIN MILLS—Latest Patent.—A supply constantly on hand. Price $200. Address New Haven Manufacturing Co., New Haven, Conn. 40 tf

SCREW BOLTS with Square, Carriage or Counter-sunk heads, bolt ends, square head wood screws, set screws, machine screws, ratchet & breast drills, standard steel and shrinkage rules for sale, by CHAS. MERRILL & SONS, 556 Grand st., New York. 46 5*

MECHANICS AND MANUFACTURERS—Tennessee Exhibition. The Third Annual Fair of the Mechanics' Institute of Tennessee will be held at Nashville in October next. Exhibitors from all the States will be permitted to enter articles and compete for the first premiums. For particulars address WM. STOCKELL, President, or H. K. WALKER, Secretary. 45 5

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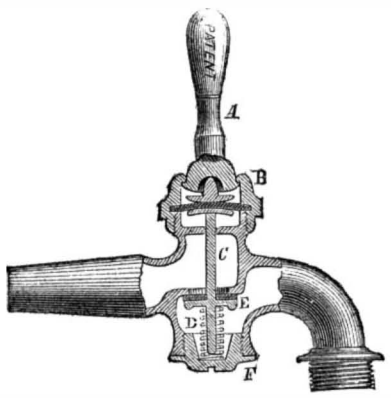
Science and Art.

Bartholemew's Improved Faucets.

Fig. 1 in the accompanying engravings represents an improved self-acting faucet, to avoid a waste of water, and to prevent the injuries which so frequently arise from faucets being left open by children or careless persons. This faucet is not susceptible of being fastened open except with much difficulty, and is, therefore, well adapted to the purposes of schools, factories, stores, tenant houses, and the like. The construction and design of this fancet is such, that while it shuts of itself when released by the hand, it never causes concussion and bursting of the pipe by too suddenly stopping the flow of water.

E is the valve, faced with leather or any ordinary material, C the valve stem, and D a strong brass spring, which urges the valve upward to its seat *against the pressure of the water*. The screw cap, B, confines the rubber diaphragm perfectly tight at its edges, as represented, and retains the upright handle, A, by its flange. There is a button (as shown) between the rubber and the lever, A, and the valve is opened by inclining the lever in either direction from a perpendicular position, which

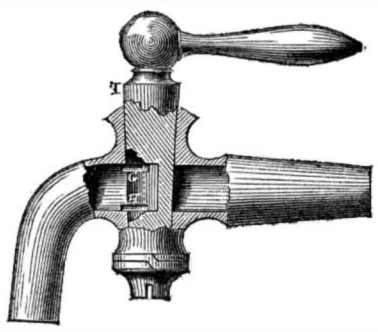
FIG. 1.



movement depresses the valve. Upon letting go the lever, the spring, D, forces the valve upward, but yielding to the force of the momemtum of the water, and overcoming and stopping it moderately without producing any jar or water ram.

Fig. 2 represents another form of faucet by the same inventor. It is an ordinary plug cock, except that provision is made for preventing the isolation of the water contained in the slot. In ordinary cocks of this char-

FIG. 2.



acter, the plug when turned contains a quantity of water, which is tightly confined, and when the same is frozen it expands the metal and ruins the cock.

The improvement consists in providing two grooves on the interior of the barrel, each extending about half way around the plug on the side from which the fluid is discharged. These are of no effect when the liquid is flowing, but so soon as the cock is shut, they serve to drain the cavity. The plug of the cock is represented by T, and the two grooves by G H. The lower groove, H, allows the water or other fluid in the slot to flow out, while the upper groove, G, allows air to enter and supply its place. The faucet represented in Fig. 2 was patented Nov. 11, 1856.

For further information concerning either of these cocks, address the inventor and manufacturer, F. H. Bartholemew, 84 Marion st., this city.

Artesian Wells.

Self-discharging deep wells are, according to a western exchange. becoming quite numerous in various sections of the West and South. In Iroquois county, Ill., there are some thirty wells of this sort, which emit cool water resembling that abounding in the highlands of Pennsylvania. In one instance, in consequence of imperfect tubing, a well owned by a Mr. Harper was rendered entirely useless, owing to a cause analogous to that which was exhibited in the Duane street well, in this city. It discharged with the water a great quantity of sand and stones, some of the stones about the size of a hen's egg. It could not be remedied; and in a few weeks several tuns of sand, stones, and gravel were vomited from the bottom of this water volcano. The ground was noticed to sink, and, from fear of being engulfed, Mr. H moved his house some sixty yards from the old site. The result has proved the wisdom of this, for the earth for twenty or thirty yards around. has since sunk, leaving a large pool ot water.

ATKINSON & MANNING'S CARRIAGE GEAR.

Fig. 1

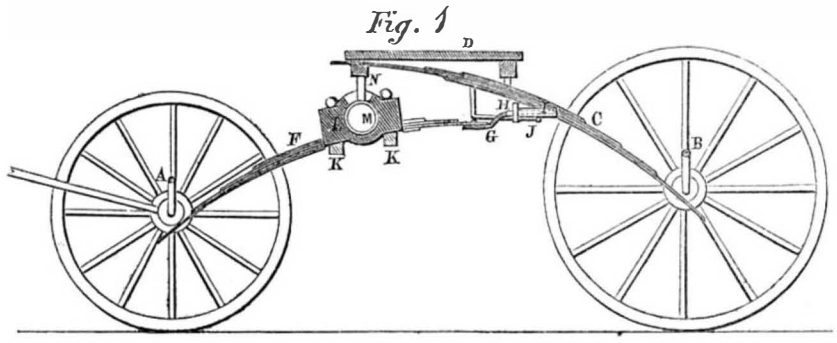
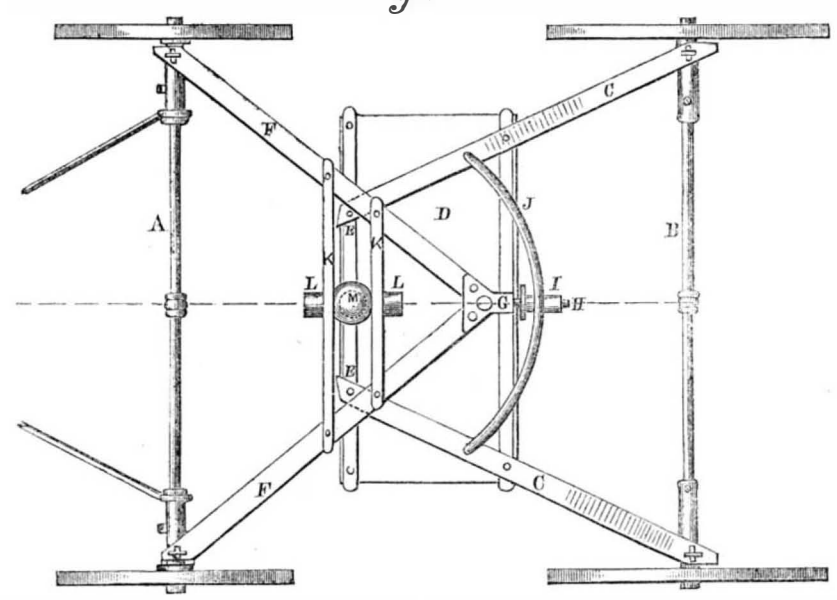


Fig. 2



The carriage represented in the accompanying figures is the invention of Charles Atkinson, of Danville, and Gilbert S. Manning, of Springfield, Ill., and combines lightness and convenience with great strength and elasticity. It is secured by patent dated the 26th of May last, and appears particularly adapted to the class of extremely light carriages known as "buggies," but can be adopted on many varieties of vehicles. The peculiarity consists in the method of arranging the parts so that the center on which the fore wheels swivel is brought into a point near the center of the carriage, and the weight supported entirely on springs, which extend to points on the axles immediately in juxtaposition with the wheels. The friction, which would prevent the easy turning of the carriage, is reduced by a friction roller to a very small amount. Fig. 1 is a vertical section, and Fig. 2 a plan view seen from below.

A and B represent respectively the two axles, A being the front. C C are the back springs, and D a light horizontal platform or flooring. The springs, C, are connected to D at the points, E E, as represented. F F are the front springs, attached at one end to the front axle, and united at the other to the iron, G. H is a stem, or cylindrical portion of G, extending backward in a horizontal line, and carrying a roller, I, which turns thereon. J is a segmental guide or curved rod, extending across the space between the springs, C C. K K are cross-pieces joining the front springs, F F. L is a casting, represented considerably larger than is employed in practice. M is a metallic globe, fitting into a corresponding cavity in L, and connected to the under side of the platform, D, by the upright end, Fig. 1. The neck or opening into the cavity in L is of sufficient size to allow all the necessary motion to the parts.

The axles, A and B, may be made extremely light, far more so than in the ordinary construction of carriages, as the weight on the springs induces but a very small transverse strain on the axles. The parts are all represented consideraly heavier than necessary, in order to show the peculiar construction and fastenings. The platform, D, carries a seat of any ordinary form, and all the parts may be so proportioned as to support the same at any desired hight.

It will be readily understood that in turning the carriage aro ind, the platform, D, the springs, C C, the curved bar, J, the upright, N, and the globe, M, correspond in position with the hinder axle, B, while the springs, F E, their cross-ties, K, the cup piece, L, and the iron, G, with its extension, H, and roller, I, all correspond in position with the front axle, A, the center of motion being the socket joint, M L. As the front axle, A, changes its position relatively to the hinder axle, B, the iron, G H, traverses across on the curved guide or support, J. The roller, I, by changing the sliding into the rolling friction, simply diminishes the resistance due to this movement. The thills and other parts may be in any ordinary form.

For further particulars the inventors may be addressed at the above-named localities.

The Lakes and the Sea.

The British schooner recently noticed as entering the lakes with hardware, direct from England, landed her freight at Chicago, and shipped her return cargo at Detroit. The *Kershaw*, which we noticed a few weeks since as the first launch in an attempt to form a regular line from the lakes to foreign ports, was constructed at Cleveland instead of Chicago, and at our latest advices was being taken to Detroit to load. Chicago enjoys a great and growing trade, but in writing from memory we have given her credit for too many enterprises, and this correction is due to the whole chain of thriving towns stretching from the rapids of Niagara to the newly opened mining ports of Lake Superior.

Literary Notices.

ILLUSTRATED COMMON SCHOOL ASTRONOMY; with Explanatory Notes and Questions for Examination. By John Brocklesby, A. M. Astronomy, as a science, is probably more neglected than any other branch of education usually taught in our common schools. There are obvious reasons for this, as undoubtedly it has not that bearing upon the practical affairs of life which belongs to some other sciences, such as chemistry, mechanics, and mathematics; yet it is a study not only highly interesting, but also very useful in its effects upon the human heart, as it prepares the mind for a higher appreciation of the Author of Creation and his glorious works. We have received from Farmer, Brace & Co., 4 Courtlandt street, this city, a copy of the above work, and after a very careful examination of the character of its contents, we cheerfully recommend it as a comprehensive and well prepared book, not only peculiarly adapted to the use of common schools, but also a convenient and useful book for the household, and one which will materially conduce to the profitable employment of a leisure hour.

HAND BOOK OF RAILROAD CONSTRUCTION—For the use of American Engineers. By Geo. L. Vose, C. E.; Jas. Monroe & Co., Boston, 1857, octavo, 480 pp This is by an extremely able man, one whose writings we always read with profit, and is a book much needed, as most works of the kind are not only antiquated, but relate to foreign materials. It treats quite thoroughly the location, construction, equipment, and management of American railroads, giving clear rules, tables and formula, and—a matter specially to be commended—giving the sources from which they are manufactured. It is profusely illustrated with outline engravings and will be valuable to all connected in any manner with either civil or mechanical engineering.

CHILE CON CARNE, or the Camp and the Field. By S. Compton Smith, M. D., acting surgeon with General Taylor's Division in Mexico. Miller & Curtis, New York, 1857, 8 vo., 404 pp. This is a life-like narrative of adventures in the Mexican war. It presents the bright side of all the internal jealousies and excitements incident to the life of a soldier, and daguerreotypes much of the history of the campaign which would otherwise remain unwritten. It is a very attractive and instructive volume.

HOW TO DO BUSINESS is the title of a neat pocket manual of practical affairs, embracing the principles of business and general advice upon such topics as belong to it. Fowlers & Wells, the publishers, have published a useful series of books upon subjects which concern our every-day affairs. They have been well received by the press, and no doubt the public have not failed to appreciate them.

RAILWAY GUIDE BOOKS for August have appeared from the press of Dinsmore & Co., and D. Appleton & Co., 346 Broadway. They are useful and convenient books for travellers.

YOUNG MEN'S MAGAZINE—Edited by Richard C. McCormick, 348 Broadway. It is a most excellent and highly instructive monthly, full of useful matter for the young man. It should have a wide circulation.

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